

JOURNAL

OF THE

AMERICAN VETERINARY MEDICAL ASSOCIATION

Convention Number

88th Annual Meeting, Milwaukee, Aug. 20-23, 1951

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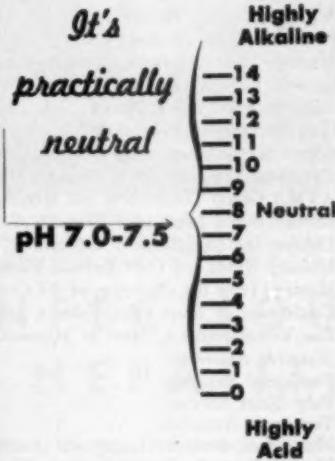
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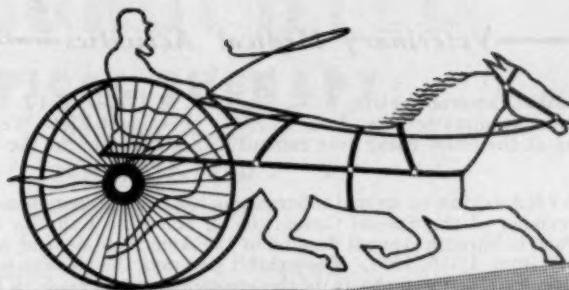
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Mires, M. H.: Nitrofurazone—A Practical Antibacterial Agent for Bovine Mastitis, J. Am. Vet. M. A. 117:49 (July) 1950.
Mires, M. H.: Nitrofurazone with Penicillin in Bovine Mastitis, Vet. News 14:9 (May-June) 1951.

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AVMA ★ Report

Veterinary Medical Activities

* The Board of Governors (Drs. W. G. Brock, W. M. Coffee, and J. R. Wells) met at Association headquarters on June 2, 1951. President-Elect Wells spent the previous day at the office going over committee assignments for the coming year.

* A new AVMA exhibit on animal tuberculosis has been prepared and constructed under supervision of the Special Committee on Scientific Exhibits for presentation at the one hundredth Annual Session of the American Medical Association in Atlantic City, June 11-15, 1951. The exhibit portrays the relation of animal and human tuberculosis, with emphasis on the accomplishments made in bovine tuberculosis control. It will be shown at the AVMA Milwaukee convention in August, the A.P.H.A. meeting in San Francisco next fall, and probably at other national and regional meetings subsequently.

* President-Elect Wells took part in the programs of the summer meeting of the South Carolina Association of Veterinarians at Clemson, S. Car., June 10-12, and the annual meeting of the Georgia V.M.A. in Atlanta, Ga., June 17-19, 1951.

* Through coöperation of the Veterinary Division, Army Air Force, arrangements have been made for Lt. Col. Rolland O. Scott, now on duty in England, to represent the AVMA at the meeting of the National Veterinary Medical Association of Great Britain and Ireland to be held at Eastbourne on the south coast of England next September.

* Dr. M. A. Emmerson, chairman of the AVMA Research Council, participated in the final examination of Dr. Andrew W. Monlux, AVMA Research Fund fellow, for the degree of doctor of philosophy—given by the Graduate Council of George Washington University in Washington, D.C., on May 25, 1951.

* Assistant Executive Secretary C. D. Van Houweling represented the Association and took part in the programs of the Utah (June 14-15), Idaho (June 18-19), Montana (June 21, 22, and 23), and Wyoming (June 24-25) associations at their various meetings.

* Mr. L. R. Fairall, public relations counsel for the Association, spent a day at the central office on June 25, 1951, planning the publicity and radio programs for the Milwaukee convention.

* President W. M. Coffee was the official representative of the Association on May 9, 1951, at the inauguration of Dr. G. Lombard Kelly as the president of the University of Georgia.

* Dr. Ed. Sorensen, professor of anatomy at the Royal Veterinary College, Copenhagen, visited Association headquarters on May 10-11, 1951. Professor Sorensen has been in this country several weeks studying work in reproduction and artificial insemination and also making program plans for the Second International Congress on those subjects, to be held in Copenhagen in 1952.

* Dr. W. R. Krill, chairman of the AVMA Emergency Advisory Committee, and civilian veterinary medical consultant to the Surgeon General of the Air Force, was in Europe inspecting Air Force bases from June 15 to July 1, 1951. He accompanied Major General Harry G. Armstrong, Surgeon General of the U.S. Air Force, on the European tour.

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⁸J. David Schaffer: Veterinary Use of Chlorophyll in Tissue Cell Stimulation, No. Amer. Vet. J. (1950), 817

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*Rose, H. T.: The Use of Bacitracin in Small Animal Medicine, J. Am. Vet. M.A. 117:306 (Oct.) 1950.

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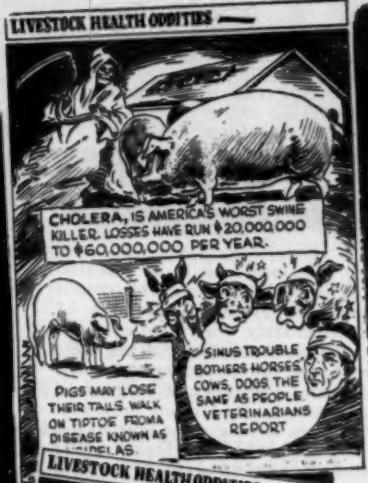
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No. 7

DOG RESEARCH NEWS

Care of a Bitch During Pregnancy

Be sure to prepare a whelping pen or box 10 days before the whelping bitch is due. At first she will probably ignore the box, even sleeping or sitting as far from it as she can get. But when labor starts, she will usually accept this convenience. For the small breeder, a box may be used for whelping, but the better system is to have a pen (see cut). It is important that during pregnancy, we keep the bitch in peak condition by feeding her a good ration. Many famous mothers have whelped famous sons and daughters on a prenatal diet of Friskies—a nourishing, *complete* dog food.

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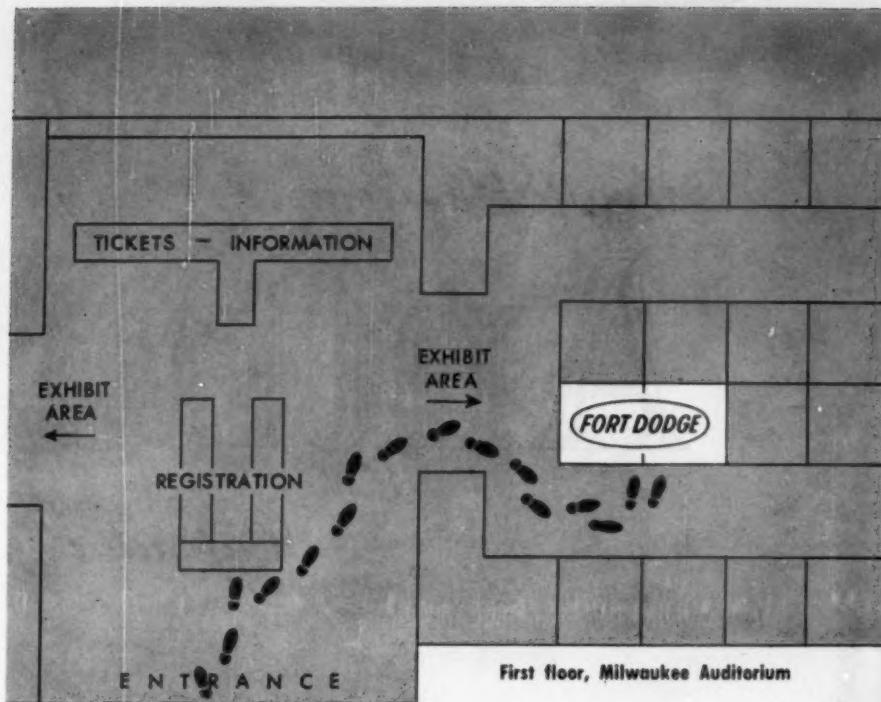
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FORT DODGE

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American Veterinary Medical Association

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VOL. CXIX

JULY, 1951

NO. 892

The Milwaukee Meeting—A Message from President Coffee

When I presented my message as president-elect to the House of Representatives at Miami Beach last year, I spoke of some of the things I thought our profession would be faced with, and should be prepared for and doing, in the rather stressful times that were developing.

Now, looking forward to the Eighty-Eighth Annual Meeting of the American Veterinary Medical Association in Milwaukee, August 20-23, I feel that these past months have been most significant for veterinarians and for veterinary medicine. I am thinking of such things as the ever-increasing need for veterinary services in animal agriculture and of our important relationship to the production of more and better foods of animal origin. I am thinking of the extension of veterinary public health work, and other ways in which veterinarians contribute to the well-being and economic welfare of the nation. I am thinking of the selection and training of men who have the proper background to enter the various fields of veterinary medicine and perform the services that are so badly needed. I feel that definite progress has been made in all these areas and in others.

Of necessity, the times have required that we devote much attention to the role of the veterinarian in military and civil defense activities. These subjects will be keynoted in the program of the Milwaukee convention, along with important scientific and practical developments of veterinary medicine of today.

This is a big and eventful year for veterinarians. With livestock prices high, the services of the veterinarian are correspondingly valuable and called for. With the

growing appreciation of animal health-human health relationships, veterinary public health work is demanding and attracting more specially trained men in the field. Pet ownership and appreciation of good veterinary care for pets are steadily increasing.

I know that the program of the Milwaukee session will be outstanding in its assembly of scientific talent for the literary side and will be equally attractive on the entertainment side. The Committee on Program and the Committee on Local Ar-



President W. M. Coffee

rangements have been working for months to prepare the outstanding features that are presented in this issue of the JOURNAL.

Veterinarians all over North America owe it to themselves and their profession to take a few days away from their busy practices and other duties to benefit from the varied and valuable technical information that the Milwaukee meeting will offer. And there is the equally great attraction which AVMA conventions afford to renew old friendships and acquaintances and to make new ones.

The folks in Milwaukee are planning to make this meeting notable for its good fellowship—*gemütlichkeit* they call it—and all that is needed is *your* presence to help make it a real success. I'm sure, if you come, you will go back home with a wealth of new ideas which will help you to better serve your clients.

I am looking forward to greeting you in Milwaukee.

W. M. COFFEE, President.

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*National Association of Federal Veterinarians.

Message from Chairman, Committee on Local Arrangements

The Wisconsin veterinarians extend a most cordial invitation to you to attend the Eighty-Eighth Annual Meeting of the American Veterinary Medical Association in Milwaukee in August.

National defense will be the keynote of the meeting, and the closed circuit television transmission of portions of the scientific program will emphasize the progress of the profession.

Our August weather is made more enjoyable by Lake Michigan's cooling breezes and beautiful lake front.

The convention entertainment will follow the

gemütlichkeit theme. "Veterinarians' Day" at the Wisconsin State Fair will feature Wisconsin's finest livestock and excellent grandstand entertainment.

For those who wish to continue their vacations, Wisconsin's northern woods and lakes offer a relaxing background for the fisherman and tourist.

We again invite you to the Eighty-Eighth Annual Meeting of the AVMA in Milwaukee next August.

s/K. G. NICHOLSON, Chairman,
Committee on Local Arrangements.

General Convention Entertainment

Monday, 9:00 p.m.—Gemütlichkeit.

Tuesday, 6:30 p.m.—Wisconsin State Fair.

Wednesday, 6:30 p.m.—Alumni Banquets.

Wednesday, 9:00 p.m.—President's Reception and Dance.

Thursday, 2:00 p.m.—AVMA Golf Tournament.

(For Women's and teenagers' entertainment, see pages 12 and 14.)

fee; tie-down fee of 75 cents per night; gas and maintenance facilities, restaurant, and transportation to downtown Milwaukee.

Golf Tournament, August 23

The fourth AVMA golf tournament will open at 2 p.m., Thursday, August 23, at the Lincoln Hills Country Club in Milwaukee. As announced in the June, 1951, JOURNAL (page 41), there will be seven divisions of competition, including divisions for veterinary medical students and exhibitors. Featured event will be the state team championship, open only to AVMA members who also are members of constituent associations. Winners in all divisions will be awarded prizes at a buffet supper to be held at the country club right after the tournament is over. Veterinarians planning to take part in the state team championship division should make arrangements immediately through the secretaries of their constituent associations.

General Officers of the Local Committee



Drs. W. Wisnicky (left), Vice-General Chairman; K. G. Nicholson, General Chairman; F. L. Gentile, General Secretary.

Committee on Local Arrangements Eighty-Eighth Annual Meeting

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V. R. Bauman

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H. L. Marsh
C. Meeusen
A. E. Moats
A. I. Moyle
F. W. Milke
L. V. Newman
K. G. Nicholson
W. J. O'Rourke
J. L. Phelps
P. Radcliffe
C. H. Reading
J. J. Roberts
R. H. Romaker
C. J. Schubert
R. F. Smith
P. B. Swart
T. W. Tuttle
R. E. Watts
E. A. Woelffer

Committee on Local Arrangements, Milwaukee Meeting
Aug. 20-23, 1951



Front row (left to right)—Drs. G. J. Marold, Clyde D. Lyle, Fred W. Milke, and W. E. Lyle.
Second row—Drs. R. O. Anderson, Gilbert Lewis, S. E. Ferguson, K. G. Nicholson, F. L. Gentile, and Walter Wisnicky.

Not present when picture was taken—Drs. C. W. Anderson, J. A. Wilson, and J. T. Schwab.

The 1951 Session—Official Call

The Eighty-Eighth Annual Meeting of the American Veterinary Medical Association will be held at the Milwaukee Auditorium, Milwaukee, Wis., Aug. 20-23, 1951.

There will be no headquarters hotel as such, since most of the convention activities will take place at the Auditorium. Six nearby hotels have been selected and a reservation form has been printed in the advertising section of the JOURNAL for the past several months. Those who have not sent in requests for accommodations should do so immediately, since the demand for rooms has kept pace with the record-breaking attendance that is expected at the Milwaukee convention.

Executive sessions of the Committee on Budget, Board of Governors, and Executive Board will be held in Chicago, at AVMA headquarters, beginning on Tuesday, August 14, and running through Friday, August 17. The Executive Board meeting on Friday will adjourn in time for members to proceed to Milwaukee that afternoon, arriving about 5 or 6 p.m.

The House of Representatives will convene in the Hotel Schroeder, Milwaukee, on Saturday morning, August 18. The first session will start at 9:30 a.m. (CST). Delegates are urged to time their arrivals for not later than Friday evening so that the session will not be delayed.

The Opening Session of the convention is scheduled for 9:00 a.m., Monday, August 20, in the Auditorium, where registration facilities will function starting Sunday noon, August 19, and continuing daily thereafter.

Following the opening ceremonies, formal addresses, and presentation of awards, the nomination of officers for the ensuing year will take place. This will be the only general session of the convention except for a brief closing session on Thursday afternoon, August 23, for installation of officers and official adjournment.

Section meetings will be held in the Auditorium beginning Monday afternoon, August 20, and continuing through Thursday morning, August 23. Various group meetings will be held as shown in the program schedule.

The meetings of the Women's Auxiliary, including sessions of their Executive Board, House of Representatives, annual meeting, and other functions for women will be held in the Hotel Schroeder as announced in the official program.

The president's reception and dance will be held on Wednesday evening, August 22, at the Schroeder following the alumni dinners which have been arranged in selected hotels.

Registration for the convention will open Sunday noon, August 19, in the rotunda of the Auditorium, where the technical (commercial) and educational exhibits will be housed in two large halls on either side of the central lobby. The exhibits will open at 8:30 a.m., Monday, August 20.

Headquarters of the AVMA, the Committee on Local Arrangements, the Press Room, and other convention activities will all be located in the Auditorium.

This issue of the JOURNAL contains practically complete details of the Milwaukee program. Members are urged to study it for information about the varied and attractive program of events of professional interest and social entertainment that will feature the 1951 Milwaukee meeting.

Extension Veterinarians To Meet in Milwaukee

Dr. W. E. Lyle, chairman of publicity for the Committee on Local Arrangements and extension veterinarian for the University of Wisconsin, has arranged an interesting program for the extension veterinarians' conference during the AVMA Convention. These meetings are scheduled for Committee Room D of the Auditorium at 4:30 p.m. on August 21 and 22, 1951.

Speakers will include Dr. O. F. Goen of Gainesville, Fla., on "Veterinary Medical Educational Activities"; Dr. J. B. Herrick, from Iowa State College, Ames, Iowa, on "Television Possibilities in Veterinary Extension". Professor Arlie Nuckles from the University of Wisconsin, Madison, will discuss "How Farm Families Get Their News." There will also be a panel discussion on extension problems to which Drs. G. S. Weaver, C. D. Lee, and Frederick A. Hall will contribute.



President-Elect John R. Wells, who will preside at the annual meeting of the House of Representatives at the Eighty-Eighth Annual Convention in Milwaukee.

AVMA Group Conferences and Meetings of Other Organizations

Sunday, August 19

- 9:00 a.m. Conference of Constituent Association Secretaries, Editors, and Public Relations Workers—*East Room, Schroeder Hotel*.
 9:00 a.m. Examinations Given by the American College of Veterinary Pathologists—*Parlor F, Schroeder Hotel*.
 10:00 a.m. Committee on Local Arrangements—*Committee Room D, Auditorium*.
 1:30 p.m. Association of Deans of American Colleges of Veterinary Medicine—*Parlor I, Schroeder Hotel*.
 2:00 p.m. Conference of Constituent Association Secretaries—*Parlor A, Schroeder Hotel*.
 2:00 p.m. Conference of Editors—*Parlor E, Schroeder Hotel*.
 2:00 p.m. Conference of Public Relations Workers—*Parlor D, Schroeder Hotel*.
 4:30 p.m. National Conference of Veterinary Examining Boards—*Parlor C, Schroeder Hotel*.
 5:00 p.m. Phi Zeta Fraternity—*Parlor G, Schroeder Hotel*.
 6:30 p.m. American Veterinary Exhibitors Association, Inc.—*Club Room, Schroeder Hotel*.
 6:30 p.m. Meeting of Delegates of the Student Chapters and Auxiliaries—*East Room, Schroeder Hotel*.
 7:00 p.m. American Board of Veterinary Public Health—*Parlor B, Schroeder Hotel*.

Monday, August 20

- 4:30 p.m. Conference of Chairmen and Workers, State Ethics Committees—*Committee Room D, Auditorium*.
 6:30 p.m. Conference of Veterinary Physiologists and Pharmacologists—*Parlor B, Schroeder Hotel*.
 7:00 p.m. National Association of Federal Veterinarians—*Parlor A, Schroeder Hotel*.
 7:00 p.m. American College of Veterinary Pathologists—*Parlor E, Schroeder Hotel*.
 7:30 p.m. National Board of Veterinary Medical Examiners—*Parlor H, Schroeder Hotel*.
 7:30 p.m. Chief Livestock Sanitary Officials—*Parlor D, Schroeder Hotel*.
 7:30 p.m. Conference of Zoo Veterinarians—*Parlor C, Schroeder Hotel*.

Tuesday, August 21

- 12:00 noon American Association of Veterinary Anatomists—*Parlor E, Schroeder Hotel*.
 4:30 p.m. Conference of Extension Veterinarians—*Committee Room D, Auditorium*.
 5:30 p.m. Women's Veterinary Medical Association—*Parlor A, Schroeder Hotel*.

Wednesday, August 22

- 12:00 noon American Animal Hospital Association—*Parlor A, Schroeder Hotel*.
 4:30 p.m. Conference of Extension Veterinarians—*Committee Room D, Auditorium*.
 6:30 p.m. Alumni Dinners—See *Bulletin Board*.

Thursday, August 23

- 2:00 p.m. Conference on Military and Civil Defense Planning—*East Room, Schroeder Hotel*.

Executive and Legislative Sessions

Tuesday, August 14

- 1:00 p.m. Committee on Budget—AVMA Headquarters, Chicago, Ill.
 7:30 p.m. Board of Governors, first session—AVMA Headquarters, Chicago, Ill.

Wednesday, August 15

- 9:00 a.m. Board of Governors, second session—AVMA Headquarters, Chicago, Ill.
 2:00 p.m. Board of Governors, third session—AVMA Headquarters, Chicago, Ill.
 7:00 p.m. Executive Board, first session—AVMA Headquarters, Chicago, Ill.

Thursday, August 16

- 9:00 a.m. Executive Board, second session—AVMA Headquarters, Chicago, Ill.
 2:00 p.m. Executive Board, third session—AVMA Headquarters, Chicago, Ill.

Friday, August 17

- 9:00 a.m. Executive Board, fourth session—AVMA Headquarters, Chicago, Ill.

Saturday, August 18

- 9:30 a.m. House of Representatives, first session—East Room, Schroeder Hotel.
 2:00 p.m. House of Representatives, second session—East Room, Schroeder Hotel.

Thursday, August 23

- 6:00 p.m. Executive Board, final session—Parlor F, Schroeder Hotel.

Election and Installation of Officers

Nominations for the election of officers of the Association will take place at the end of the Opening Session on Monday morning, August 20. If a ballot election is required on account of there being more than one nomination for the respective offices, polls will be set up in the AVMA executive secretary's office in the auditorium on Tuesday, August 21. The officers to be elected at Milwaukee are: president-elect, five vice-presidents, and treasurer. President-Elect John R. Wells, of West Palm Beach, Fla., will be installed as president at the Closing Session on Thursday, August 23, along with other officers elected at the annual meeting.

Military Needs and Civil Defense Planning Conference Scheduled for August 23

A conference for presenting the military needs for veterinary officers and for discussing the profession's civil defense planning and organization has been set for Thursday, the last day of the convention, Aug. 23, 1951, at 2 p.m. The conference is being sponsored by the AVMA Emergency Advisory Committee and all chairmen and members of state association emergency advisory committees. All state veterinarians and all federal veterinarians are urged to attend. Of course, all veterinarians are welcome.

The program will include reports from top federal government officials, military and civilian. The responsibilities of state and federal regula-

tory and public health officials will be discussed as will the participation of the state and local veterinary medical civil defense committees. There will be plenty of time for discussion.

Announcements have gone out to all state veterinarians, federal veterinarians in charge in all states, and to the state associations and their emergency advisory committees. A complete program will be published in the August JOURNAL and mimeographed copies of this program will be mailed to all those specifically urged to attend.

This conference will provide an opportunity for all segments of the profession to learn what others are doing relative to civil defense. It will also chart the course for future activities by the federal and state agencies and professional association committees.

Message from the Chairman of the Committee on Women's Activities

The women of Wisconsin welcome you and look forward with genuine pleasure to your visit to Milwaukee. One of the leading American cities, it has a quaint charm and personality that is re-



Mrs. A. E. Woelffer, Chairman, Women's Activities

freshing and unusual. It is difficult to imagine that less than one hundred years ago Milwaukee was a primitive Indian village and fur-trading post. But, from its pioneer days, the Milwaukee of today has preserved its richest heritage — natural beauty. Milwaukee's attractiveness is enhanced by its location on Lake Michigan. It offers splendid opportunities for shopping and entertainment for everyone. There will be so many places to see during the brief period of the convention that many of you will want to extend your stay in Wisconsin to see some of the finest vacation spots in the nation.

The committee is planning a delightful tea in the beautiful Crystal Ball Room in the air-conditioned Hotel Schroeder on Monday afternoon, the opening day. In the evening, a *gemutlichkeit* form of entertainment will be held for the men and women at the Schroeder. This is a typical example of Milwaukee, the city of friendliness and good fellowship, and here you will have an opportunity for seeing old friends and meeting new ones. Don't miss this gala time.

On Monday and Tuesday afternoon, the women have been invited to enjoy the hospitality of the Blatz Brewery and make a tour of their modern plant. This will afford the opportunity and education to see the various processes of this old Milwaukee industry.

The celebrated Wisconsin State Fair will be in full swing during the convention, and Tuesday has been proclaimed "Veterinarian's Day." A

special section of the grandstand will be reserved for veterinarians and their families for the evening program. You can't afford to miss this treat.

We will have an information desk at the Auditorium for the ladies, where we will be glad to assist you in planning your free time or direct you to the various places of interest in Milwaukee, such as the beautiful flowers and gardens at Mitchell Park Conservatory, Public Museum and Library, Radio City, and many others. We have arranged for a lounge at the Auditorium as well as the Schroeder for your comfort at all times.

Come along and join the happy throng bound for Milwaukee this August 20-23.

*s/MRS. A. E. WOELFFER, Chairman,
Committee on Women's Activities.*

Conference of Secretaries, Editors, and Public Relations Workers Combined

The secretaries of constituent associations, editors of veterinary medical publications, and chairmen of state association public relations committees will hold a joint conference on Aug. 19, 1951, the day before the AVMA convention officially opens. The three groups will meet together through the luncheon session, and then will separate for individual conferences. For the past two years, these groups have held entirely separate conferences during the AVMA convention.

Present plans call for one half of the morning session to be utilized for a discussion of the three-fold job a secretary performs when he functions as editor, public relations worker, and secretary. The balance of the morning will be devoted to a public relations problem clinic. Knotty public relations problems will be discussed from the viewpoint of a secretary, an editor, and public relations chairmen.

There will be one speaker at the luncheon meeting, after which the conferees will adjourn to their conferences for secretaries, editors, and public relations committeemen.

Zoo Veterinarians to Meet at Milwaukee

The Zoo Veterinarians will hold their annual meeting during the AVMA Convention in Milwaukee on Monday, August 20, at 7:30 p.m., in Parlor C of the Schroeder Hotel. This unofficial group of veterinarians, employed either full or part-time by various zoos throughout the United States and Canada, have met during the annual meeting of the AVMA each year since 1946 to present case reports, papers, and general discussions dealing with medical problems of wild animals.

s/PATRICIA O'CONNOR, Secretary.

Women's Activities

Mrs. E. A. Woelffer, Chairman

Mrs. C. A. Brandly, Co-Vice Chairman

Mrs. F. W. Milke, Co-Vice Chairman

Reception

Mrs. C. H. Reading, Chairman
Mrs. C. A. Deadman, Co-Chairman
Mrs. A. McDermid
Mrs. J. E. McDermid
Mrs. R. E. Nichols
Mrs. J. W. O'Rourke
Mrs. C. Otterson
Mrs. R. Romaker
Mrs. R. Smith
Mrs. D. Sorensen

Publicity

Mrs. A. I. Moyle, Chairman
Mrs. J. Wilson, Co-Chairman
Mrs. F. Wilson

Tours

Mrs. M. C. Klofanda, Chairman
Mrs. F. W. Milke, Co-Chairman
Mrs. F. L. Gentile
Mrs. H. Gutsch
Mrs. G. W. Kelm
Mrs. J. A. Patton
Mrs. M. Shiftman

Luncheon

Mrs. F. W. Milke, Chairman
Mrs. F. L. Gentile, Co-Chairman
Mrs. W. M. Johnson, Co-Chairman
Mrs. W. Arzberger
Mrs. V. R. Bauman
Mrs. A. Boesewetter
Mrs. E. A. Fortmann
Mrs. C. J. Gurnau
Mrs. A. J. Kletti
Mrs. K. E. Lloyd

Mrs. M. C. Klofanda, Secretary

Mrs. H. L. Marsh
Mrs. C. Meeusen
Mrs. A. E. Moats
Mrs. E. O. Nehmer
Mrs. W. E. Norris
Mrs. T. W. Tuttle
Mrs. R. Waats

Tea

Mrs. G. Downing, Chairman
Mrs. W. R. Winner, Co-Chairman
Mrs. G. J. Dedolph
Mrs. J. R. Fesler
Mrs. G. Krill
Mrs. L. J. Lewis
Mrs. C. Orton
Mrs. W. L. Richards
Mrs. W. W. Wisnicky

Decoration

Mrs. C. A. Blandly, Chairman
Mrs. O. Lunder
Mrs. J. H. Nanscawen

Teenagers

Mrs. G. J. Marold, Chairman
Mrs. B. H. Borman
Mrs. D. J. Fruit
Mrs. W. M. Johnson
Mrs. W. A. Thompson
Mrs. K. G. Nicholson, Chairman
Mrs. J. A. Patton, Co-Chairman
Mrs. F. W. Baker
Mrs. G. E. Downing
Mrs. E. A. Fortmann
Mrs. F. L. Gentile

Mrs. C. J. Gurnau
Mrs. G. C. Kunz
Mrs. G. J. Marold
Mrs. A. E. Moats
Mrs. A. I. Moyle
Mrs. P. E. Neff
Mrs. B. W. Nussdorfer
Mrs. G. C. Schofield
Mrs. C. W. Schwiesow
Mrs. M. Shiftman
Mrs. D. K. Sorensen
Mrs. J. A. Wilson
Mrs. L. H. Winn
Mrs. W. R. Winner
Mrs. J. B. Woodward

Hospitality

Mrs. R. Anderson, Chairman
Mrs. J. T. Schwab, Co-Chairman
Mrs. Melvin Downing
Mrs. W. W. Arzberger
Mrs. V. R. Bauman
Mrs. W. M. Foster
Mrs. W. A. Thomson
Mrs. J. O. McCoy
Mrs. T. Grefsheim
Mrs. R. B. Hipeenbecker
Mrs. C. K. Kelsey
Mrs. K. E. Lloyd
Mrs. C. R. Strange
Mrs. P. T. Candlin
Mrs. S. H. McNutt
Mrs. W. L. Richards
Mrs. W. P. Winner
Mrs. L. J. Lewis
Mrs. C. D. Lyle
Mrs. James Welch



Mrs. C. A. Blandly (left), Co-Vice Chairman, Women's Activities; Mrs. M. C. Klofanda, Secretary;
Mrs. F. W. Milke, Co-Vice Chairman.

Teenagers' Program

Monday, August 20

- 2:00 p.m.
to
5:00 p.m. Bus Tour to Washington Zoo.
9:00 p.m. Gemütlichkeit.

Tuesday, August 21

- 1:30 p.m. Museum Tour with Lecture and Movie.
8:00 p.m. State Fair.

Wednesday, August 22

- 11:00 a.m.
to
5:00 p.m. Sightseeing Trip to Greenfield Park, Luncheon and Splash Party.

Baby Sitter Service

Reliable baby sitters can be hired during the convention through "Partime Parents," recommended by the Milwaukee Chamber of Commerce. The phone number in Milwaukee is Edgewood 2-2270.

Teenagers, Attention

In addition to the excellent program especially planned for teenagers, there will be opportunities

for sun bathing and swimming on the shores of Lake Michigan—at cool, sandy beaches just a short distance from the convention headquarters. Also recommended is a trip to the Washington Park Zoo. And, if you can find the time, don't miss a visit to the Milwaukee docks, one of America's great inland ports, to watch Great Lakes steamers load and unload their cargo.

Committee on Women's Activities, Milwaukee Meeting, Aug. 20-23, 1951



Front row (left to right)—Mrs. L. R. Richardson, Mrs. F. W. Milke, Mrs. E. A. Woelffer, and Mrs. C. A. Brandly.

Standing—Mrs. K. G. Nicholson, Mrs. F. L. Gentile, Mrs. M. C. Klofanda, Mrs. R. O. Anderson, Mrs. G. J. Merold, and Mrs. C. H. Reading.

Meeting of Student Chapter and Auxiliary Delegates, August 19, 1951

Veterinary medical students and their wives who are planning to attend the AVMA convention in Milwaukee are invited to attend a buffet supper in the Schroeder Hotel on Aug. 19, 1951, at 6:30 p.m. Faculty members acting as chapter advisers and their wives are also cordially invited to attend this social hour and the business meeting which will follow. Students and wives from the Milwaukee area will serve as hosts and hostesses for the social hour. Officers from the AVMA and the Women's Auxiliary to the AVMA will also attend the buffet supper.

Scheduling the social hour early in the convention week was a suggestion received from the students and their wives attending the Miami Beach convention in 1950. It was their expressed desire to have the opportunity to become acquainted at the beginning of the convention so that they could associate and discuss matters of mutual interest throughout the week. The schedule of events during the actual convention days is too full to allow sufficient opportunity for the student get-together after the convention program officially begins. The Sunday evening time was selected with the concurrence of the Auxiliary and AVMA officers.

Following the buffet supper, representatives from the student chapters, clubs, and auxiliaries will meet with AVMA and Women's Auxiliary representatives for a business meeting.

Message from the President of the Women's Auxiliary

The Women's Auxiliary to the AVMA will be in session during the Eighty-Eighth Annual Meeting of the AVMA in Milwaukee, Wis., Aug. 20-23, 1951. We invite the wives of all veterinarians and veterinary students to take part in the programs and many activities planned for the women. Mrs. R. L. Richardson, third vice-president of the Women's Auxiliary, in cooperation with Mrs. E. A. Woelffer, chairman of the Committee on Women's Activities, have arranged many interesting and entertaining social activities.

On Monday morning, August 20, all women are invited to join their husbands at the Opening Session of the AVMA Eighty-Eighth Annual Meeting.

Monday afternoon, a tea at the Schroeder Hotel will provide an opportunity for women from all sections to get acquainted, as well as to renew old friendships.

The fourth annual meeting of the House of Representatives of the Women's Auxiliary to the AVMA will meet Tuesday morning, August 21. This is the legislative body of our Auxiliary and it will act on all business, except the election of officers. The state, regional, and provincial auxiliaries will be represented by duly qualified delegates. All interested women are urged to attend and hear the reports that will be given.

This year, the annual business meeting will be held Wednesday morning, August 22. Brief reports will be made by each officer and the chairman of the House of Representatives. The nomi-



Mrs. Dennis Coughlin, President Women's Auxiliary

nating committee will give its report and new officers will be elected. The meeting will be adjourned for the annual auxiliary luncheon at 1 o'clock, where special recognition will be given to the past-presidents and officers of the Women's Auxiliary.

The local committee has been untiring in its effort to provide interesting and inspirational entertainment, which will make this thirty-fourth annual meeting of the Women's Auxiliary most outstanding.

We hope to see you all in Milwaukee!
s/MRS. DENNIS COUGHLIN, President.

Women's Auxiliary Officers

President—Mrs. Dennis Coughlin, Knoxville, Tenn.

President-Elect—Mrs. C. E. Bild, Miami, Fla.
First Vice-President—Mrs. H. S. McDonald, Toronto, Ontario.

Second Vice-President—Mrs. Russell A. Runnels, East Lansing, Mich.

Third Vice-President—Mrs. L. R. Richardson, Ravenna, Ohio.

Secretary—Mrs. C. L. Miller, River Forest, Ill.

Treasurer—Mrs. Charles C. Rife, Atlanta, Ga.
Parliamentarian—Mrs. C. M. Rodgers, Blandinville, Ill.

Chairman, House of Representatives—Mrs. C. M. Rodgers, Blandinville, Ill.

Recorder, House of Representatives—Mrs. Alfred E. Coombs, Skowhegan, Maine.

Chairman, Foreign Relations—Mrs. Anthony E. Bott, Belleville, Ill.

Women's Program

Saturday, August 18

7:30 p.m. Budget Committee, Women's Auxiliary.

Sunday, August 19

9:30 a.m. Breakfast, Meeting of Executive Board of Women's Auxiliary
—*Parlor G.*

12:30 p.m. Registration Opens—*Auditorium.*

Monday, August 20

8:30 a.m. Registration—*Auditorium.*
8:30 a.m. Visit Commercial and Educational Exhibits—*Auditorium.*
9:00 a.m. Attend Opening Session of the AVMA—*Auditorium.*
12:30 p.m. Luncheon and Tour, Blatz Brewery (Limited to 275).
3:00 p.m. Women's Tea and Reception—*Empire Room, Schroeder Hotel.*
9:00 p.m. Gemütlichkeit—*Crystal Ball Room, Schroeder Hotel.*

Tuesday, August 21

9:30 a.m. House of Representatives, Women's Auxiliary (All interested women are invited)—*East Room, Schroeder Hotel.*
12:30 p.m. Luncheon and Tour, Blatz Brewery (Limited to 275).
1:00 p.m. Bus Tour, Johnson Wax Company, Racine, Wis. (Limited to 180).
8:00 p.m. State Fair (Families Are Invited To Attend).

Wednesday, August 22

9:30 a.m. Annual Meeting of Women's Auxiliary—*East Room, Schroeder Hotel.*
1:00 p.m. Annual Luncheon of Women's Auxiliary followed by Style Show—*Crystal Ball Room, Schroeder Hotel.*
6:30 p.m. Alumni Dinners. See Bulletin Board.
9:00 p.m. President's Reception and Dance—*Crystal Ball Room, Schroeder Hotel.*

Thursday, August 23

9:30 a.m. Executive Board, Women's Auxiliary (new officers).
This day is open for individual choices.
12:30 p.m. Closing Session of the AVMA Eighty-Eighth Annual Meeting
—*Auditorium.*
(All Women Are Invited To Attend.)

The Milwaukee River winds through the central business district of Milwaukee, the AVMA convention city for 1951.



Opening Session

Plankinton Hall — Milwaukee Auditorium

Monday, August 20, 9:00 a.m.

Music.

9:30 a.m.

Call to Order.—President W. M. Coffee.

Invocation.—The Rev. Claude P. Zens, Professor of Scripture, St. Francis Major Seminary, St. Francis.

The National Anthem.

Address of Welcome.—The Honorable Frank P. Zeidler, Mayor of the City of Milwaukee.

Response.—Dr. J. T. Schwab, President, Wisconsin Veterinary Medical Association, Madison, Wis.

Greetings from Women's Auxiliary.—Mrs. Dennis Coughlin, President, Knoxville, Tenn.

Address.—Dr. W. M. Coffee, President.

Announcements.—Dr. K. G. Nicholson, General Chairman, Committee on Local Arrangements.

Planning for the Proper Utilization of Veterinarians in the National Defense

Mobilization Program.—Dr. W. R. Krill, Chairman, National Emergency Advisory Committee, Columbus, Ohio.

Presentation of Awards.

By Dr. A. R. Theobald, Chairman, Special Committee on Humane Act Award:

1951 Humane Act Award.

By Dr. W. M. Coffee, Chairman *ex officio*, Committee on Awards:

Twelfth International Veterinary Congress Prize.

Borden Award for 1951.

By Dr. W. G. Brock, Chairman, Executive Board:

Gold Key to Incoming President.

Service Scroll to Retiring President.

*Nomination of Officers.**

*If a ballot election is required (due to having more than one nomination for the respective offices), polls will be set up in the executive secretary's office in the Auditorium on Tuesday, August 21.

Officers to be elected at Milwaukee are: president-elect, five vice-presidents, and treasurer. President-Elect John R. Wells will be installed as president at the closing session on Thursday, August 23, 12:00 noon.

Bathing in Lake Michigan is one of the attractions at the AVMA convention in Milwaukee.
Aug. 20-23, 1951





J. L. Hopping, Sr., Atlanta, Ga., Chairman

Section on General Practice

Monday, August 20, 1:30 p.m.

*Plankinton Hall,
Milwaukee Auditorium*

First Session

- 1:30 Opening Remarks by Chairman.
Report of Secretary.
- 1:35 (1) The Effect of Feeding Antibiotics to Farm Animals.
Damon Catron, Ames, Iowa.
- 2:00 (2) Hog Cholera Immunization.
J. W. Giffee, Sioux City, Iowa.
Discussion.
T. L. Steenerson, Wilkinson, Ind.
- 2:30 (3) Swine Erysipelas.
L. T. Railsback, Ellsworth, Minn.
Discussion.
R. B. Helming, Cresco, Iowa.
- 3:00 (4) Bovine Acetonemia.
G. R. Moore, East Lansing, Mich.
Discussion.
H. P. Wessels, Geneva, Ill.
- 3:30 (5) Symposium on Brucellosis:
Moderator—P. O. MacKintosh, Yakima, Wash.
Practical Application of the ABR (Ring) Test in the Field.
R. L. West, St. Paul, Minn.
Experiences in Eradicating Brucellosis.
H. T. Greene, Genesee Depot, Wis.
Swine Brucellosis.
L. M. Hutchings, West Lafayette, Ind.
Experiences of Michigan Practitioners with Brucella (M) Vaccine.
C. F. Clark, East Lansing, Mich.
Brucellosis and the Practitioner.
J. F. McAuliff, Cortland, N. Y.
- Question Box.
Adjournment at 4:30 p.m.

Section on General Practice

Tuesday, August 21, 9:00 a.m.

*Plankinton Hall,
Milwaukee Auditorium*

Second Session



G. W. Jensen, Antioch, Ill., Secretary

- 9:00 (6) Vesicular Stomatitis with Particular Reference to the 1949 Wisconsin Epizootic.
*C. A. Brandly, R. P. Hanson, and T. L. Chow,
Madison, Wis.*
- Discussions.
*J. E. McDermid, Ladysmith, Wis.
D. F. Ludvigson, Ridgeland, Wis.*
- 9:30 (7) Biological Warfare and Civil Defense.
W. A. Hagan, Ithaca, N. Y.
- 10:00 (8) Light Horse Practice (Illustrated).
P. J. Meginnis, Urbana, Ill.
- 10:30 (9) Do You Want to Develop a Poultry Practice?
W. A. Beard, Greenview, Ill.
- Nominations for Section Officers.
- 11:00 (10) Television—Anesthesia Demonstrations.
Narrator—James Farquharson, Ft. Collins, Colo.
- Horses.
L. K. Way, Ft. Collins, Colo.
- Cows.
W. J. Gibbons, Auburn, Ala.
- Swine.
Harry Hardenbrook, Urbana, Ill.
- Narrator—R. P. Knowles, Miami, Fla.*
- Dogs.
J. K. Bone, Chicago, Ill.
- Cats.
H. M. Moe, Hammond, Ind.
- Adjournment at 12:00 noon.



C. A. Manthei, Beltsville, Md., Chairman

Section on Research

Monday, August 20, 1:30 p.m.

*Engelman Hall,
Milwaukee Auditorium*

First Session

- Opening Remarks by Chairman.
Report of Secretary.
- 1:35 (11) Experimental Pyelonephritis in Mice, Rabbits, and Cattle.
E. V. Morse and Louise Wipf, Madison, Wis.
- 1:55 (12) Observations on Some of the Effects of Estrogens on the Canine Female with Particular Reference to the Genitalia.
N. D. Connor, Auburn, Ala.
- 2:15 (13) Liver Fluke Control and Its Relations to Snail Ecology.
E. G. Batte and L. E. Swanson, Gainesville, Fla.
- 2:35 (14) "Rh" and Iso-Immunizations in Thoroughbred Horses.
W. L. Wallenstein, A. L. Brueckner, and L. I. Poelma, College Park, Md.
- 2:55 (15) The Use of Biologics in Experimental Fowl Cholera.
D. F. Eveleth and F. M. Bolin, Fargo, N. Dak.
- 3:15 (16) Response of Monkeys to Poliomyelitis Virus After Injection with Four Strains of Newcastle Disease Virus.
R. L. Reagan, D. M. Schenck, H. O. Livenweaver, and A. L. Brueckner, College Park, Md.
- 3:35 (17) Lungworm Infection in Sheep.
C. G. Durbin, Beltsville, Md.
- 3:55 (18) The Experimental Production of Hyperkeratosis (X-Disease) by Feeding a Processed Concentrate.
Peter Olafson and Kenneth McEntee, Ithaca, N. Y.
- 4:15 (19) Pathology of Vesicular Stomatitis in Cattle.
T. L. Chow, R. P. Hanson, and S. H. McNutt, Madison, Wis.
- Adjournment at 4:30 p.m.

Section on Research

Tuesday, August 21; 9:00 a.m.

*Engelman Hall,
Milwaukee Auditorium*

Second Session



L. M. Hutchings, West Lafayette, Ind., Secretary

- 9:00 (20) The Effect of Thyroxine and Glucose Upon Motility and Conception Rate of Bovine Semen.
J. C. Ramge, Columbus, Ohio.
- 9:20 (21) Duration of Immunity to Brucellosis Induced in Cattle With Strain 19 Vaccine.
C. A. Mantbei, Beltsville, Md., C. K. Mingle, Washington, D. C., and R. W. Carter, Columbus, Ohio.
- 9:40 (22) Studies on the Pathogenicity of *Brucella Abortus* for Swine. II.
W. W. Bay, F. V. Washko, D. E. Bunnell, and L. M. Hutchings, West Lafayette, Ind.
- 10:00 (23) Results of County-Wide Blood Tests Following Two to Four County-Wide Ring Tests for Brucellosis.
F. C. Driver and M. H. Roepke, St. Paul, Minn.
- 10:20 (24) Swine Erysipelas Induced by Skin Scarification.
R. D. Shuman, Washington, D. C.
- Nominations for Section Officers.
- 10:45 (25) Studies on the Pathology of Virus Anemia or Ictero-Anemia of Swine.
W. E. Brock, C. C. Pearson, and I. O. Kleiwer, Pawhuska, Okla.
- 11:05 (26) Incidence of Influenza in Swine as Shown by Hemagglutination-Inhibition Serum Titers.
G. A. Young, Jr., and N. R. Underdahl, Austin, Minn.
- 11:25 (27) A Survey of the Beta Hemolytic Streptococci from Swine.
J. R. Collier, Ames, Iowa.
- 11:45 (28) The Relation of Nutrition to Digestive Disturbances in Swine.
C. K. Whitehair, Stillwater, Okla.
- Adjournment at 12:00 noon.



Section on Small Animals

Tuesday, August 21, 1:30 p.m.

*Engelman Hall,
Milwaukee Auditorium*

First Session

C. L. Miller, Oak Park, Ill., Chairman

Opening Remarks by Chairman.

Report of Secretary.

- 1:35 (29) Motion Picture—Some Observations Concerning Preanesthetics, Curare, Analeptics, and Oxygen (Illustrated).

F. J. Kingma, Columbus, Ohio.

- 2:00 (30) Incidence, Symptomatology, and Diagnosis of Canine Histoplasmosis.

C. C. Cole, J. A. Prior, and D. M. Chamberlain, Columbus, Ohio.

- 2:30 (31) The Incidence of Histoplasmosis in Missouri.

H. W. Howell and A. A. Case, Columbia, Mo.

- 3:00 (32) Symposium on Fractures:

Moderator—W. G. Magrane, Mishawaka, Ind.

Preparation of a Thomas Splint (Demonstration).

J. H. Krichel, Keokuk, Iowa.

The Schaffer Sleeve in Fracture Fixation.

R. L. Butler, Stillwater, Okla.

Resumé of Fracture Panel, Chicago Veterinary Medical Association Meeting, March 31, 1951.

E. C. Saunders, Elgin, Ill.

Observations on Internal Fixation Appliances in the Dog.

J. M. Baker, Montreal, Quebec.

Adjournment at 4:30 p.m.

Section on Small Animals

Wednesday, August 22, 9:00 a.m.

*Plankinton Hall,
Milwaukee Auditorium*



W. H. Riser, Skokie, Ill., Secretary

Second Session

- 9:00 (33) The Use of a Plasma Extender in Animals.
H. B. Benjamin, Milwaukee, Wis.
- 9:30 (34) Combining a Large and Small Animal Practice in the Same Office (Illustrated).
P. T. Gambrel, Winnebago, Ill.
- Nominations for Section Officers.
- 10:15 (35) The Diagnosis and Prognosis of Foreleg Paralysis in the Dog.
M. W. Allam, F. E. Nulsen, and F. H. Lewey (deceased), Philadelphia, Pa.
- 11:00 (36) Television—Canine Surgical Demonstrations.
Narrator—C. F. Schlotthauer, Rochester, Minn.
Open Reduction and Intramedullary Pinning of a Femoral Fracture.
W. O. Brinker and R. G. Schirmer, East Lansing, Mich.
Patellectomy in the Dog.
R. L. Rudy and V. L. Tharp, Columbus, Ohio.
Removal of a Foreign Body from the Stomach.
R. L. Storm, Evanston, Ill., and W. H. Riser, Skokie, Ill.

Adjournment at 12:00 noon.



C. W. Barber, Gainesville, Ga., Chairman

Section on Poultry

Tuesday, August 21, 1:30 p.m.

*Plankinton Hall,
Milwaukee Auditorium*

First Session

1:30 (37) Motion Picture.

Opening Remarks by Chairman.
Report of Secretary.

1:45 (38) Disease and the Poultry Industry. *C. D. Carpenter, Chicago, Ill.*

2:15 (39) Poultry Practitioners' Forum on Bacterial Diseases of Poultry: *Moderator—C. D. Carpenter, Chicago, Ill.*

*W. A. Beard, Greenview, Ill.
H. P. Eames, Manchester, Mich.
F. C. Tucker, Claypool, Ind.
P. V. Neurol, Blairstown, Iowa.*

3:00 (40) Biological Products in the Prevention and Control of Certain Poultry Diseases. *B. J. Pomeroy, St. Paul, Minn.*

3:30 (41) Television—Poultry Diagnosis and Laboratory Techniques. *Narrator—C. S. Bryan, East Lansing, Mich.*

Conducting a Poultry Practice.

C. L. Nelson, Jewell, Iowa, and C. D. Lee, Ames, Iowa.

Laboratory Procedures in Disease Diagnosis.

C. F. Clark, East Lansing, Mich.

C. H. Cunningham, East Lansing, Mich.

L. R. Davenport, Springfield, Ill.

A. R. Drury, East Lansing, Mich.

N. B. King, Columbus, Ohio.

W. F. Riley, Jr., East Lansing, Mich.

L. B. Sholl, East Lansing, Mich.

H. J. Stafseth, East Lansing, Mich.

Adjournment at 4:30 p.m.

(NOTE.—The first half hour of the telecast will be devoted to "Conducting a Poultry Practice"; the last half hour will feature "Laboratory Procedures in Disease Diagnosis" by the Section on Public Health.)

Section on Poultry

Wednesday, August 22, 9:00 a.m.

*Engelman Hall,
Milwaukee Auditorium*

Second Session



J. O. Alberts, Urbana, Ill., Secretary

9:00 (42) Motion Picture.

Nominations for Section Officers.

9:30 (43) Summary of Practical Prevention and Control Measures for Some of the Bacterial Diseases of Poultry.

C. D. Lee, Ames, Iowa.

10:00 (44) The Field Diagnosis and Control of Respiratory Diseases of Poultry.

W. L. Ingalls, Columbus, Ohio.

10:30 (45) The Laboratory as an Aid to the Poultry Practitioner.

C. C. Morrill, Urbana, Ill.

10:45 (46) Practitioner Review of Prevention and Control of Avian Respiratory Diseases:

Moderator—C. H. Cunningham, East Lansing, Mich.

W. A. Beard, Greenview, Ill.

C. A. Brandly, Madison, Wis.

B. J. Pomeroy, St. Paul, Minn.

E. J. Kerr, Minneapolis, Minn.

C. L. Nelson, Jewell, Iowa.

Discussion Period.

Adjournment at 12:00 noon.



J. F. Hokanson, Auburn, Ala., Chairman

Section on Surgery and Obstetrics

Wednesday, August 22, 1:30 p.m.

Plankinton Hall,
Milwaukee Auditorium

First Session

- 1:30 (47) Cesarean Section in the Cow (Illustrated).
Sam Elmer, Richland Center, Wis.
- 2:00 (48) Perineorrhaphy for Correction of Relaxed Vagina.
J. D. Gadd, Cockeysville, Md.
- 2:30 (49) Preliminary Report on the Level of Progesterone Necessary to Maintain Pregnancy in Dairy Cattle.
A. W. Uren and J. I. Raeside, Columbia, Mo.
- Nominations for Section Officers.
- 3:00 (50) Symposium on Aids in Dystocia:
Cow.
J. N. Campbell, St. Paul, Minn.
Sow.
R. B. Helming, Cresco, Iowa.
Bitch.
R. E. Ruggles, Moline, Ill.
- 3:30 (51) Television—Surgical Demonstrations.
Narrator—*E. J. Frick, Manhattan, Kan.*
Porcine Cesarean Section.
E. R. Frank, Manhattan, Kan.
Rumenotomy for the Relief of Traumatic Gastritis.
G. R. Moore, East Lansing, Mich.
- Adjournment at 4:30 p.m.

Section on Surgery and Obstetrics

Thursday, August 23, 9:00 a.m.

*Plankinton Hall,
Milwaukee Auditorium*



Second Session

G. A. Gettelman, Hartford, Wis., Secretary

9:00 (52) Motion Picture—Functional Anatomy of the Reproductive Tract of the Cow.

Robert Getty and J. B. Herrick, Ames, Iowa.

Opening Remarks by Chairman.

Report of Secretary.

10:00 (53) Panel on Reduced Fertility in Cows:

Moderator—S. H. McNutt, Madison, Wis.

Bovine Endometrium Infections.

E. A. Woolfner, Oconomowoc, Wis.

Fertilization and Embryonic Death in Dairy Cattle.

W. H. Dreher, Shawano, Wis.

Practical Aspects of Hormone Therapy in Cattle.

L. M. Cropsey, Fair Haven, N. J.

10:30 (54) Indications for Cesarean Section in the Bitch.

C. B. Krone, La Grange, Ill.

11:00 (55) The Physiology of the Rumen as It Pertains to Bloat.

R. E. Nichols, Madison, Wis.

Discussion.

W. D. Pounden, Beltsville, Md.

11:30 (56) Symposium on Maintaining Fertility in the Bull:

Semen Examination.

C. A. V. Barker, Guelph, Ont.

Infections of the Genital Tract.

G. R. Raps, Des Moines, Iowa.

Injuries Encountered in Donor Bulls.

W. F. Riley, Jr., East Lansing, Mich.

Adjournment at 12:00 noon.

Closing Session



Section on Public Health

Wednesday, August 22, 1:30 p.m.

*Engelman Hall,
Milwaukee Auditorium*

First Session

L. R. Davenport, Springfield, Ill., Chairman

- 1:30 (57) Motion Picture—The Triple Threat of Brucellosis.
Opening Remarks by Chairman.
Report of Secretary.
- 2:00 (58) Mutual Interests and Objectives in Public Health and Animal Disease Control.
H. G. Geyer, Columbus, Ohio.
- 2:30 (59) Current and Future Animal-Human Health Problems.
I. A. Merchant, Ames, Iowa.
(Coffee served.)
- 3:00 (60) Coördination of Veterinary Public Health and Animal Disease Control Programs.
E. T. Anderson, Dixon, Ill.
- 3:30 (61) Case Finding and Disease Control.
W. D. Stovall, Madison, Wis.
- 4:00 (62) Panel on Veterinary Public Health at Work:
Moderator—*J. T. Steele, Atlanta, Ga.*
H. G. Geyer, Columbus, Ohio.
I. A. Merchant, Ames, Iowa.
E. T. Anderson, Dixon, Ill.
W. D. Stovall, Madison, Wis.
L. M. Schuman, Springfield, Ill.
- Adjournment at 4:30 p.m.

(NOTE.—The last half hour of the television demonstrations in the Poultry Section, Tuesday, 3:30 p.m., will be devoted to Public Health under the heading of "Laboratory Procedures in Disease Diagnosis.")

Section on Public Health

Thursday, August 23, 9:00 a.m.

*Engelman Hall,
Milwaukee Auditorium*



D. L. Lichty, West Palm Beach, Fla., Secretary

Second Session

- 9:00 (63) Motion Picture—From Range to Range.
- 9:30 (64) Veterinary Public Health in a City Health Department.
R. K. Anderson, Denver, Colo.
(Coffee served.)
- 10:00 (65) The Functional Roles of the Veterinarian and the Sanitary Engineer in Public Health.
C. W. Klassen, Springfield, Ill.
- 10:30 (66) Future Outlook Toward Special Weapons Defense.
Norvin Kiefer, Washington, D.C.
- Nominations for Section Officers.
- 11:00 (67) Panel on the Importance of Veterinary Public Health in Civil Defense:
Moderator—W. T. S. Thorp, Bethesda, Md.
R. K. Anderson, Denver, Colo.
C. N. Neupert, Madison, Wis.
C. A. Brandy, Madison, Wis.
H. U. Garrett, Des Moines, Iowa.
Norvin Kiefer, Washington, D.C.

Adjournment at 12:00 noon.

Closing Session

Plankinton Hall — Milwaukee Auditorium

Thursday, August 23, 12:00 Noon

Installation of Officers.

Adjournment.

The Educational Exhibits

The educational exhibits for the Milwaukee meeting have been carefully selected and expertly designed to give veterinarians a comprehensive view of important problems requiring the profession's attention. Seven colleges and five federal organizations will be represented in a grouping that also will include displays developed by the AVMA in the interests of professional relations.

Brucellosis

Lt. Col. F. A. Todd, V.C., U.S. Army

Research and Development Board, Office of Secretary of Defense

Historical aspects of brucellosis will be portrayed with respect to epidemiology and epizootiology. Emphasis will be on laboratory tests, control measures, prevention, and public health significance.

Histoplasmosis

John A. Pryor and Clarence Cole

Colleges of Medicine and Veterinary Medicine, The Ohio State University

This exhibit will demonstrate the communicability of Histoplasmosis, manifestations in animals and man, and diagnostic procedures.

Leptospirosis

Captain Robert J. Byrne, V.C., U.S. Army

Veterinary Division, Army Medical Service Graduate School

An illuminated display will illustrate Leptospira with the aid of microphotographs and schematic drawings. The disease in human patients, contrasting pictures of infected and normal tissues from laboratory animals, geographic distribution of leptospirosis, and host range will complete the exhibit.

Mastitis Control in New York State

James M. Murphy and Harry G. Hodges

New York State Mastitis Research and Control Program

This exhibit will show how New York veterinarians are dealing with bovine mastitis—through the New York State Mastitis Research and Control Program and the New York State Veterinary College at Cornell University. Cooperation of practicing veterinarians, herd management and sanitation, and importance of laboratory analysis are emphasized. Literature will be distributed.

Meat Inspection

J. A. Patton

Meat Inspection Division, Bureau of Animal Industry, USDA

Pictures and charts will show how federal meat inspection is conducted, its extent and cost, and the protection it affords consumers.

Milk and Food Sanitation

R. J. Helvig

Division of Sanitation, U. S. Public Health Service

The exhibit will feature a quiz machine containing a film strip of 20 questions on milk and food sanitation. Public Health Service publications dealing with this subject will be displayed.

Veterinary Public Health at Work*J. H. Steele**Communicable Disease Center, U. S. Public Health Service*

Four panels will depict activities of veterinarians in local health departments, state boards of health, federal health services, and international health agencies. Attention will be focused on communicable disease investigation and control, research, and milk, meat, and poultry hygiene.

Bacterial and Parasitic Diseases of Poultry*Ebel McNeil and Norman Levine**College of Veterinary Medicine, University of Illinois*

The exhibit will be divided into four parts: (1) Pullorum disease, emphasizing the importance of disease-free eggs, pullorum-free hatcheries, and clean premises; (2) fowl cholera, illustrating portals of entry for *Pasteurella multocida*, its resistance to environment, and reservoirs of infection; (3) blackhead, with attention to often-overlooked reservoirs of infection; and (4) ectoparasites, focusing on the disease-transmission role of lice, mites, fleas, flies, beetles, and ticks.

Avian Infectious Bronchitis*Charles H. Cunningham**School of Veterinary Medicine, Michigan State College*

Epizootiology and diagnosis of avian infectious bronchitis will be depicted in this display, which will be staged jointly with poultry exhibits from the universities of Illinois and Wisconsin.

Avian Pneumoencephalitis (Newcastle Disease)*C. A. Brandy, R. P. Hanson, and S. K. Simba**Department of Veterinary Science, University of Wisconsin*

An exhibit on Newcastle disease will complete a six-phase poultry exhibit comprising parasitic, bacterial, and virus diseases—University of Illinois, Michigan State College, and University of Wisconsin cooperating.

Graduate Training and Research*Willis E. Lyle, Robert P. Hanson, and Erskine V. Morse**Department of Veterinary Science, University of Wisconsin*

Four panels will illustrate important phases of veterinarians' graduate training and research. Material from M.S. and Ph.D. theses will be included. The aim is to show what already has been accomplished and the opportunities that exist in the fields of veterinary medical research and teaching.

Radiologic Aspects of Abnormalities in Domestic Animals*Francis A. Spurrell**School of Veterinary Medicine, University of Minnesota*

Illuminated radiographs will show foreign materials located in a series of domestic animals and abnormalities of the thoracic cavity in various species. Equine navicular disease detection by radiology will be demonstrated and accompanied by motion pictures of the condition.

American Veterinary Medical Association Displays

Exhibits pertaining to the code of ethics, liability insurance, and publications of the American Veterinary Medical Association will be on view at the Milwaukee meeting, along with a new AVMA exhibit on tuberculosis developed for initial showing at the American Medical Association's convention in Atlantic City, June 11-15, 1951.

The Commercial Exhibits at Milwaukee

The commercial exhibits at the Milwaukee Convention will form the most colorful parade of technical developments contributing to veterinary medical progress ever seen anywhere in the world.

Sixty leading companies, occupying 64 booths that span nearly 12,000 square feet of exhibit space, will take part in this always-interesting and attractive feature.

The American Veterinary Exhibitors Association, which has done so much in building up and improving the AVMA exhibits, is putting forth extra effort to induce every veterinarian to visit all of these fine displays. To this end, it will award a set of valuable luggage to some veterinarian at a drawing to be held during the convention. Details on how to qualify for the prize will be available at the registration desk.

Abbott Laboratories

Booth C-40

Abbott Laboratories will feature intravenous solutions and disposable equipment, along with Nembutal, Pentothal Sodium, penicillin specialties, and general pharmaceutical products of particular interest to veterinarians.

Allied Laboratories, Inc.—Pitman-Moore Company

Booths C-1 and C-2

The Pitman-Moore division of Allied Laboratories, Inc., will display a number of comparatively new additions to its line, including Anti-Infectious Canine Hepatitis Serum, Pemdas, Penicle, and Suljex. Field representatives and laboratory scientists will be in attendance to answer questions.

A. S. Aloe Company

Booth C-33

This exhibit will show a cross-section of the complete stock of medical equipment and supplies carried by the A. S. Aloe Company. Highlighted will be new-model Steeline—tomorrow's treatment room furniture today—featuring the body-contour table top, magnetic door catches, and advanced design, all in new decorators' colors.

Americana Corporation

Booth C-63

Encyclopedia Americana, which is so typically American, together with the *Book of Knowledge*, which has been an educational bulwark of school children, will be featured in this exhibit.

Ames Company, Inc.

Booth C-13

The Ames Diagnostic Kit will be featured and demonstrated. This small kit (3 in. x 9 in.) contains Clinitest, Bumintest, Acetest, and Hematest—simplified tests for urine sugar, albumin, acetone, and occult blood. Ames Company representatives will be glad to discuss Decholin and Decholin Sodium, standard hydrocholeretic agents for biliary tract diseases.

Armour Veterinary Laboratories

Booth C-9

The Armour Veterinary Laboratories exhibit will focus special attention on an outstanding and unique Armour glandular product, Posterior Pituitary Liquid (double U.S.P. strength). The display also will feature Armour Anti-Hog Cholera Serum and Hog Cholera Virus, pharmaceutical products, and surgical gut sutures.

Arnold Laboratories*Booth C-3*

Arnold Laboratories will display pharmaceutical products of special interest to the dispensing veterinarian: Calf Scours Vitaform, Calf Scour Compound, Fluoreca Calarsen, Red Udder Liniment, and Ben Hex Emulsion. A complete line of hormones and parenteral sulfonamides also will be shown along with several new products.

Ashe Lockhart, Inc.*Booth C-29*

Ashe Lockhart, Inc., will have an attractive display of the full Lockhart line of biological products for large and small animals, including anti-serums, vaccines, bacterins, toxoids, and diagnostic agents.

Bilhuber-Knoll Corp.*Booth C-23*

The Bilhuber-Knoll exhibit will center on these veterinary medicinal chemicals: Metrazol, respiratory-circulatory stimulant; Tannalbin, intestinal astringent for diarrhea; Ocin, relaxant of smooth muscle spasm of the gastrointestinal and genitourinary tracts; and Theocalcin, diuretic that increases urine output and reduces the ascites, edema, and difficult breathing of cardiac patients.

Borden's Dog Foods*Booth C-61*

This display will feature the new, improved Borden's Dog Food in meal and chunk (pellet) forms, along with Borden's Esbilac, a replacement for bitch's milk. The exhibit will call attention to the fact that Borden's Dog Food is now fortified with Esbilac to provide extra health-giving properties.

Bristol Laboratories, Inc.*Booth C-34*

The Bristol booth will focus attention on the Quadricillins, four new products for veterinarians. The Quadricillines comprise procaine penicillin in oil combined with aluminum monostearate, dihydrostreptomycin, sulfamerazine, and sulfathiazole for udder instillation. Flo-Cillin Aqueous and Flo-Cillin "96," repository penicillins, also will be on display.

Campbell X-Ray Corporation*Booth C-43*

Campbell X-Ray Corporation, of Boston, will feature the 1951 X-Ray Animagraph. Of exclusive veterinary design, this is a complete x-ray plant of maximum efficiency and safety developed by constant improvement over a period of fifteen years.

Chicago Veterinary Supply Co.*Booth C-6*

Chicago Veterinary Supply Co., wholesale distributors exclusively to veterinarians, will display products of many leading manufacturers. Antibiotic drugs will be among the featured items.

C.S.C. Pharmaceuticals*Booth C-52*

C.S.C. Pharmaceuticals, a division of Commercial Solvents Corporation, will display bacitracin, antibiotic agent which is used topically in ointment or aqueous form and may be given orally in tablet form for local action in the intestinal tract. Also on display will be C.S.C. crystalline penicillin G potassium salt for veterinary medical use.

Corn Belt Laboratories, Inc.
Booths C-15 and C-16

In addition to Corn Belt Anti-Hog Cholera Serum and Hog Cholera Virus, the display of Corn Belt Laboratories, Inc., will contain a complete line of biological and pharmaceutical products and instruments for veterinarians. Special items in the exhibit will be the "Cosmo Cutting Unit w/ Power Control" and modern insect-control products.

The Corn States Serum Company
Booths C-21 and C-22

The Corn States Serum Company will exhibit samples of many biological products and specialties produced by the Company, along with products of firms represented as distributors.

Curts-Folse Laboratories
Booth C-46

Representatives of Curts-Folse Laboratories, manufacturers of select pharmaceuticals for veterinarians since 1918, will be on hand to show and discuss the company's line of products.

Dencolo Corporation
Booth C-7

Dencolo Corporation, of Denver, will display Dr. Frank's Fetal Extractor, a mechanical device to assist veterinarians in delivering calves when normal birth is not possible.

Doho Chemical Corporation
Booth C-42

Doho Chemical Corporation and its subsidiary, Mallon Chemical Corporation, will display the following products: Auralgan, for otorrhea, canker, and ear mites; O-Tos-Mo-San, for suppurating ears, fungus conditions, and other forms of aural dermatomycosis; Rinalgan, new nasal decongestant; and Rectalgan, liquid topical anesthetic for relief of pain and itching.

Eisele & Co.
Booth C-39

Eisele precision hypodermic syringes and needles, clinical thermometers, and suture needles will be featured in the display of Eisele & Co.

Fort Dodge Laboratories, Inc.
Booths C-44 and C-45

Fort Dodge will exhibit these new biological products: Blackleg-Hemorrhagic Septicemia Bacterin, Clostridium Chauvei-Septicus Pasteurella Bacterin, and Wart Vaccine. New pharmaceutical specialties to be shown are Suldistat, Sulsox, Tra-Plus, Filsin, Cecazole, Tympsal, Paratox, and Myzin (liquid and smear). Instruments also will be displayed.

Franksville Specialty Co.
Booth C-41

The Tamm Udder Support in various sizes, sheepskin liners used in the supports, bull suspensors in various sizes, and cow and calf halters will be featured by the Franksville Specialty Co., of Franksville, Wis.

Fromm Laboratories, Inc.
Booth C-49

Fromm Laboratories, Inc., will display products for the control and treatment of canine diseases, especially distemper and hepatitis.

Gaines Dog Foods
Booth C-48

The Gaines Division, General Foods Corporation, will display their new

"Crunch-Type" product. Representatives will be glad to explain the many advantages of this form of meal.

Goshen Laboratories, Inc.

Booth C-12

Goshen's own products to be displayed include Derma Calm, Goshen Mineral and Yeast, Foot Rot Ointment, and Skin Ease. The Micro Ear Trimmer also will be shown, along with Americaine's ointments and Amerotol; Cappel's Flocculation Test; Ciba's Coramine, Pyribenzamine, and hormones; Eaton's Furacin Solution Veterinary; Pyroxylin's plastics; and White Laboratories' Tyrolene.

Hamilton Pharmacal Company, Inc.

Booth C-55

The Hamilton Pharmacal Company, Inc., will feature only one item—"H. P. Vehicle." This is a new-type antibiotic vehicle for the treatment of bovine mastitis, available only to graduate veterinarians through recognized veterinary distributors.

Haver-Glover Laboratories

Booths C-19 and C-20

The Haver-Glover display, occupying two adjoining booths, will feature some of the new Haver-Glover pharmaceutical products developed during the past year, along with biological products and surgical equipment of all kinds.

Hill Packing Company

Booth C-64

Hill Packing Company will have an electrically illuminated display of their various canned and frozen food items. Information on these products, including Hill Prescription Diets, will be available.

Jensen-Salsbury Laboratories, Inc.

Booth C-18

Jen-Sal items on display for both large and small animal practices will include Anthol, new all-purpose anthelmintic for dogs; Sulfa-Kol, modern sulfonamide therapy for infectious diarrheas; and Nebuphene, an innovation in canine geriatrics.

Kellogg Company

Booth C-60

The Kellogg Company will display their three forms of Gro-Pup Dog Food: Ribbon, Flaked Meal, and Pellets. The ribbon and meal forms carry the AVMA-AAHA Seal of Approval as complete foods.

Kirschner Manufacturing Company

Booth C-35

Kirschner Manufacturing Company will exhibit new intramedullary pins and related instruments, along with the standard Kirschner line of fracture equipment.

Lloyd Brothers, Pharmacists, Inc.

Booth C-24

New dietary and therapeutic agents for optimum animal growth and health will be shown by Lloyd Brothers, Pharmacists, Inc. The display will highlight Arvimin, newest product in its field.

Lowe & Lowe Company, Kitty Litter Division

Booth C-57

"Kitty Litter," produced by Lowe & Lowe Company, of Cassopolis, Mich., is a specially processed material that provides a new and better solution to the cat box problem. This will be emphasized in the exhibit, which also will show how it dries and deodorizes, without harm to pets and at less cost than sand.

The S. E. Massengill Company
Booth C-54

The S. E. Massengill Company's Veterinary Division will display pharmaceutical products backed by fifty-four years of manufacturing experience and made available to the profession by over 300 representatives.

Merck & Co., Inc.
Booth C-28

The exhibit of Merck & Co., Inc., will be concerned with some of the physiologic aspects of cortisone and the adrenal gland.

Miller Surgical Company
Booth C-38

The Electro-Surgical Scalpel, for electrosurgery, electrocoagulation, cauterization, and desiccation will be featured in the Miller Surgical Company exhibit. Also on display will be the complete Miller veterinary line of electrodiagnostic instrument outfits, including unusually bright electrical headlights, otoscopes, ophthalmoscopes, bronchoscopes, gastroscopes, illuminated specula, and forceps.

Motorola, Inc.
Booth C-56

Motorola, Inc., will display a new two-way radio unit called the Uni-Channel Sensicon Dispatcher. This is ideally suited for veterinarians in maintaining instant and direct communication with their offices. Motorola engineers will be present to explain mechanical details and aid veterinarians in obtaining federal operating permits.

The National Laboratories Corporation
Booth C-25

The National Laboratories Corporation will exhibit items that have won wide acceptance in the profession, including the National line of biological and pharmaceutical products.

Nelson Laboratories
Booth C-59

Nelson Laboratories will display a varied line of veterinary specialty products of its own manufacture, including Creo-So-Dex, Nia-So-Dex, Totamin A, Totamin B, and sodium sulfafuinoxaline solution. Products manufactured for Nelson Laboratories by many leading suppliers also will be shown.

Nicholson Manufacturing, Inc.
Booth C-31

The Nicholson display will be built around specialized instruments for the large animal practitioner. In addition to the Nicholson Hi-Current Electric Firing Iron and Cautery, there will be artificial insemination equipment, serum and instrument cases, electric branding equipment, and several new products.

Norden Laboratories
Booth C-47

Norden Laboratories will present a complete line of biological and pharmaceutical products and instruments, sold exclusively to veterinarians in accordance with their nationally advertised policy. New product developments of the past year will be featured. Neutrality of Sulfatose (Improved) will be demonstrated on the pH scale.

Parke, Davis & Company
Booth C-17

Members of the Parke, Davis & Company Department of Veterinary Medicine will be on hand to discuss these featured specialties: Chloromycetin,

Penicillin S-R, Penicillin S-R with Dihydrostreptomycin, Benadryl, and Liquid Germicidal Detergent. Literature will be available on several products.

Chas. Pfizer & Co., Inc.

Booth C-4

Terramycin, new broad-spectrum antibiotic agent, will be featured in the display of Chas. Pfizer & Co., Inc. Special veterinary dosage forms of Terramycin will be shown and indications for use described.

The Quaker Oats Company, Ken-L Products Division

Booth C-55

The Quaker Oats Company will display its family of Ken-L-Products: Ken-L-Ration, Ken-L-Biskit, and Ken-L-Meal, in a new and colorful exhibit.

Ralston Purina Company

Booth C-53

The mutual importance of nutrition and disease control will be depicted in the Ralston Purina Company exhibit. The display will show how the Company serves the interests of both farmers and veterinarians by emphasizing the relationship between nutrition and disease control in its contacts with customers.

Schenley Laboratories, Inc.

Booth C-10

Schenley Laboratories, Inc., one of the world's largest prime producers of penicillin and streptomycin, will feature penicillin products designed exclusively for use by veterinarians. Penicillin vaginal suppositories, penicillin ointment for udder instillation, and procaine penicillin G in oil will be included.

Sharp & Dohme, Inc.

Booth C-50

Pharmaceutical and biological products of interest to both large and small animal practitioners will make up the Sharp & Dohme display. Attention will be focused on special dosage forms of various sulfonamides and antibiotic drugs, 'Lyovac' Brucella Abortus Vaccine (desiccated), and other lyophilized preparations.

R. J. Strasenburgh Co.

Booth C-32

Naprylate in the treatment of fungus or ringworm infections, Gexane for mange, and a new development in mastitis therapy will be shown by the R. J. Strasenburgh Co.

Sunbeam Corporation, Hardware-Machinery Division

Booth C-14

Veterinarians are invited to observe the powerful motor, ease of handling, and durability features of the Sunbeam Stewart Clipmaster—for clipping cows, horses, and other farm animals. Also on display will be the new Sunbeam Stewart calf dehorner with automatic control for correct, steady heat, permitting safe dehorning with saving of time and labor.

Swift & Company

Booth C-5

Canned Pard and Swift's Dog Meal will be featured in a colorful and informative display presented by Swift & Company.

Syracuse Pharmacal Co., Inc.*Booth C-58*

The Syracuse Pharmacal Co., Inc., will show its complete line of veterinary pharmaceutical products. Featured items will be Emulan, Emusul, Merasul, Emu-Tricin, and SyrEmul—udder infusion vehicles for use with penicillin and/or streptomycin in the treatment of bovine mastitis.

The Upjohn Company*Booth C-27*

New pharmaceutical specialties for veterinary practice, with informative literature and samples, will be featured in the exhibit of the Department of Veterinary Medicine, The Upjohn Company. Special attention will be directed to Hydrolose and Lipomul Biosulfa.

Veterinary Medicine*Booth C-51*

Veterinary Medicine will display some of its recent issues and a selected group of new veterinary textbooks. All attending veterinarians are invited to examine samples of publications dealing with newer developments in the field of veterinary practice.

Vitamineral Products Company*Booth C-37*

Sources of vitamins and minerals used in formulating Vitamineral Supplements—sold only through veterinarians for more than thirty years—will be shown in a special display prepared by the Vitamineral Products Company. Veterinarians are invited to register at the booth for a free supply of the 1951 edition of this company's nationally known book, *VpC Feed Formulae*.

The Warren-Teed Products Company*Booth C-26*

Of particular interest in the Warren-Teed exhibit will be V-Chlorophyll and V-C-B-U ointments, recently reported to be the treatment of choice in the repair of surface injuries. These and other Warren-Teed products to be displayed have been designed to meet the most exacting requirements of the practicing veterinarian.

Wilson & Company, Inc.*Booth C-30*

Wilson & Company's display will demonstrate the Balamac and Balamac Plus principles of Ideal Dog Food formulation. Balamac indicates balanced formula with reference to amino acid content, and Balamac Plus signifies balanced ratio of all ingredients. A booklet, "Professional Handbook on Amino Acids and Proteins," will be available at the booth.

Winthrop-Stearns, Inc.*Booth C-36*

The Veterinary Division of Winthrop-Stearns, Inc., will feature Pento-brocanal, stable solution of pentobarbital, along with many of their original synthetic pharmaceutical preparations for veterinarians, including Phisohex, Parenamine, Roccal, Neoprontosil, Istizin, and Nemural. Also included will be Hepvac and other Fromm Laboratories vaccines exclusively distributed to veterinarians by Winthrop-Stearns.

Wisconsin Alumni Research Foundation*Booth C-62*

The Wisconsin Alumni Research Foundation will demonstrate the safe and effective action of Warfarin, new rodenticide. Literature on successful baiting will be available. Also included will be charts showing results of two years of Foundation experiments with a new product for treating calf scours.

What Veterinarians Should Know About Biological Warfare

In considering the unconventional warfare attacks which might be used against this country, one which is of particular concern to the profession of veterinary medicine is the possible attack against our animals (including poultry) through the spread of disease-producing agents, commonly referred to as biological warfare. This type of warfare could also be employed against man or plants with equal effectiveness. The methods by which bacteriological warfare might be used are:

- 1) Attacks with living, disease-producing bacteria and viruses.
- 2) Attacks with lethal toxins.
- 3) Attacks with special chemicals, known as artificial hormones, sometimes referred to as growth regulators.

THE PROFESSION'S RESPONSIBILITY

The responsibility of our profession, in war and peace, is to guard the health of the animals of the nation and in that way insure an adequate supply of foods of animal origin, as well as wool and hides; also the animal by-products essential for medical and pharmaceutical purposes. Therefore, our primary concern in biological warfare is the introduction of foreign diseases and/or the increased incidence of diseases normally present. Foods of animal origin form the basis of the American diet and are a part of our American way of life. They are essential to the vigor and health of our nation, especially in times of an all-out emergency, to furnish the stamina necessary to carry out our war efforts. Widespread sabotage through the use of disease-producing agents directed against our livestock population, without an alert veterinary profession and without a well-planned program for meeting such attacks, could be disastrous.

Such planned sabotage by enemy agents can be carried out long before the actual outbreak of hostilities or before the formal declaration of war. It is for this reason that plans for dealing with such attacks have been given top priority in the emer-

gency defense planning by the veterinary medical profession.

ORGANIZATION ESTABLISHED

In the civil defense planning program for our country, every effort is made to use well-established governmental agencies and avoid unnecessary duplication of effort and confusion. Fortunately, there are well-established agencies for the control and eradication of animal diseases in the United States. The Bureau of Animal Industry of the U. S. Department of Agriculture, with its close working relationship with the various state disease-control agencies, has over a half century of successful disease control to its credit. On several occasions during this time, outbreaks of foreign disease have occurred in this country and, in each instance, they have been promptly eliminated by the close teamwork of the BAI, state disease control agencies, and other veterinarians. It is, therefore, logical and sound planning for the supervision of this phase of civil defense to be delegated to the United States BAI. Its ability has been demonstrated and the trained personnel with the necessary experience are available to deal with such emergencies.

Every precaution is being taken, by careful inspection and quarantine of animals brought into this country, to prevent the accidental introduction of foreign diseases. Stringent regulations governing the importation of animal products are rigidly enforced. We can, therefore, feel reasonably secure from the *accidental* introduction of foreign diseases. It is the *planned* sabotage by enemy agents through possible contamination of biological products, feeds in feed-mixing plants, the spreading of infection in hatcheries, stockyards, and animal distribution centers which presents the greatest problem and is the one of most concern. Through our modern channels of trade, diseases might spread rapidly and if our eradication efforts are to be successful, they must be recognized immediately.

PRACTICING VETERINARIAN IS KEY MAN

The key men to successfully combat any attack against our animal population

This article on biological warfare was prepared by the executive committee of the AVMA Emergency Committee.

through the use of biological agents are the practicing veterinarians. They constitute our first line of defense. They will most likely be the first to be confronted with the results of such an attack, and upon their alertness and quick action hinges the success of counter measures to be initiated by the disease-control agencies. What then are the responsibilities of the practicing veterinarian in this program of defense against biological warfare?

1) *Study all available information relative to foreign diseases which are the most likely to be used for attack against our animals.* The BAI has prepared pamphlets on some of these diseases for distribution to all practicing veterinarians through the state emergency advisory committees. These should be read carefully. Every practitioner should be able to recognize, or at least be suspicious of, these diseases should they be encountered in his practice.

2) *Immediately (before leaving the premises)* the state veterinarian or the federal veterinarian in charge in your state should be contacted if you suspect any of these foreign diseases in your practice.

3) *The owner must be instructed not to move any animals from the premises,* and not to permit visitors on the premises until after representatives from the state or federal disease-control agencies have been consulted.

4) *Don't use the term "foot-and-mouth disease"* in speaking to the owner or when reporting by telephone or telegram to state or federal authorities. Speak of a suspicious vesicular condition. This is important in order to avoid wild rumors and widespread misinformation.

5) *If contact has been made with the diseased animals* and you have walked around in the infected premises while making an examination, be sure that hands have been disinfected and leave boots and all outer garments on the premises before continuing to other calls. It would be even better to completely change all wearing apparel before going to another farm. Bull leads, ropes, and any other equipment used in connection with the examination should be left on the premises.

6) *Report any marked increased incidence in your territory of diseases enzootic to this country.* The spread of the causative agents of our common diseases such as

hog cholera could be used effectively to obtain the same ultimate objective—reducing our food supply. Therefore, any increased incidence should be reported promptly. Isolated instances of increased incidence may not seem significant until reports from several areas are consolidated.

7) *Don't (and this is extremely important) remove any animals or birds suspected of having any of the foreign diseases to a state laboratory or any other laboratory for a diagnosis.* Don't send any tissues, scrapings, blood samples from such animals to a laboratory. This would result in another potential center of infection. Confine everything to the premises until a diagnosis has been made.*

8) Another contribution every veterinarian can make is to casually inform their clientele of the possibility of biological warfare, and the importance of getting an early diagnosis of any disease condition which may occur in their herds or flocks. This message can be conveyed in such a way as not to cause any undue alarm if time is taken to present the true facts in a rational manner.

Biological warfare is nothing to become hysterical about. We must simply regard it as another special weapon of war,—one which we must be prepared to counteract.

DISEASES LIKELY TO BE USED

Some of the diseases which an enemy might be expected to use in biological attacks against our animal population are:

1) *Foot-and-Mouth Disease.*—While this disease is not one which causes high mortality among animals, it is still regarded as the disease most likely to be utilized and one which might prove the most destructive. It is ideal for this use because it is extremely infectious and because of the rapidity with which it spreads. While the mortality is comparatively low, the disease quickly and effectively reduces the production of milk and meat to the point where the animal becomes unprofitable. It is estimated that widespread foot-and-mouth disease infection would reduce our milk and meat production from 25 to 50 per cent.

Any complacency on the part of the public or our profession as a result of the ap-

*The state and federal officials will arrange for diagnosis to be made on the premises, as outlined further in this article.

parent successful control of the disease in Mexico, with a program including the use of vaccine, would magnify the difficulty of receiving the full support and co-operation needed for the employment of the drastic measures necessary for foot-and-mouth disease eradication. Everyone needs to know the facts about the Mexican program. Otherwise we may have to overcome ideas that we should use the same type of attack in the event of an outbreak in this country. We need to know, too, that the use of vaccine would not necessarily be successful in another campaign.

In Mexico, the disease was widespread before the BAI entered the picture. Adequate quarantine and the control of animals was tried and found to be impossible. Slaughter of all exposed and diseased animals was soon found to be impractical. Vaccination as an additional counter-measure was the only alternative. Fortunately, there was only one type of the virus present, which greatly facilitated the use of vaccines. However, in all stages of the campaign the slaughter of susceptible animals involved in centers of active infection was used in conjunction with the regular periodic inspection and vaccination. While there has been only one minor outbreak of the disease during the past sixteen months, it is still too early to predict that the program has been entirely successful or that the disease has been eradicated.

We must remember that there are six known immunologic types of the virus. In the event of planned sabotage with this virus, we could logically expect that several or possibly all six strains might be introduced. A vaccine made from one strain does not immunize against the virus of another strain and as yet no known polyvalent vaccine has proved effective. It can readily be appreciated, therefore, how utterly hopeless it would be to depend on vaccination in combating an outbreak of foot-and-mouth disease in this country. Furthermore, the time necessary to identify the strains of the virus and get into full-scale production of the vaccine would mean a long period of delay during which the disease could become quite widespread.* Because of this knowledge, there is no logical

reason to consider any procedure of combating this disease in this country other than that of complete eradication through slaughter and quarantine which has proved so effective in the past. In following this method, the multiplicity of virus types and strains need not be considered.

2) *Rinderpest*.—This disease has never been present in the United States, yet might well be utilized by enemy agents. The mortality of infected cattle is much higher than with foot-and-mouth disease. However, its rate of spread is slower.

3) *Fowl Plague*.—Fowl plague occurred in the United States on one occasion in 1924, and again in 1929, and was promptly eradicated. The mortality from this disease is extremely high.

4) *Asiatic Newcastle Disease*.—This disease is far more lethal than the American form of the disease. The disease occurred in California during the past year, having been brought in with a shipment of game birds from the Orient. It was recognized early and was successfully eradicated.

5) In addition to the above foreign diseases, others might be employed, and the use of the causative agents of diseases commonly present in this country should not be overlooked. Such agents could be surreptitiously used quite effectively for a period of time, perhaps without creating undue suspicion.

ERADICATION DEPENDS UPON DIAGNOSIS

The entire success of any program designed to meet such attacks depends upon early recognition of the disease, followed by rigid quarantine and vigorous eradication procedures. Since accurate diagnosis is of primary importance, the BAI has held training schools for key personnel, strategically located throughout the United States, who are readily available to investigate any suspicious disease outbreak. Recently, state and federal regulatory officials held a series of regional meetings, where the state laws pertaining to quarantine, destruction of diseased and exposed animals, payment of indemnity, etc., were carefully reviewed. In instances where the laws were found inadequate, suggestions were made for the enactment of laws necessary to initiate an immediate eradication program. Suggestions to the officials were made relative to the need for surveying the availability

*At best, the protection afforded by foot-and-mouth disease vaccine is extremely variable in both intensity and duration; and some animals are not protected at all.

of equipment needed in the event of a major disease outbreak. The diseases most likely to be used by saboteurs were discussed. Particular emphasis was placed on the matter of "on the premises" diagnosis. A list of the names, addresses, and telephone numbers of all specially trained federal veterinarians was given to each regulatory official with instructions that these men should be contacted without delay to investigate any suspicious disease condition. Suggestions were also made relative to the alerting of all practicing veterinarians of the state through news letters and a pamphlet to be prepared by the BAI, so that they in turn will report any suspicious disease conditions to the proper state officials. The importance of properly educating the livestock owner of his responsibility to promptly report (to his veterinarian) any disease condition which he may observe in his herds or flocks was also stressed. These meetings were valuable as an initial step in the over-all program.*

In conclusion, it is again pointed out that biological warfare is a special weapon which might be used by an enemy against our animals. There is no need for hysteria. On numerous occasions in the past half century, foreign diseases have gained a foothold in this country and in every instance they have been successfully eradicated. There is no reason to believe that the same methods and the same close co-ordination of efforts by the various segments of the profession should fail in the case of planned biological attack. The practicing veterinarian is in the front line of defense. He is responsible for the early recognition of the diseases used in such attacks and the prompt reporting of such diseases before they become widely disseminated. There is no reason to doubt our ability to meet this challenge when it has to be met.

Rumen Physiology

The qualitative and quantitative absorption potentialities of the rumen have not been exploited. Therefore, we do not know

whether this organ offers an important avenue of entrance of nutrients or whether overloading, spoiled feed, and atony in the rumen offer an opportunity for absorption of inadequately prepared substances which may be harmful to the animal.

Another function of the rumen which needs to be studied is the production, utilization, absorption, and elimination of gas.—R. E. Nichols: *The Challenge of Research and Rumen Physiology*. *Vet. Sci. News*, Nov. 15, 1950.

Ten Top Science Advances

Science News Letter (Dec. 23, 1950) lists the following as the ten most important science advances during 1950, picked by Watson Davis, director of Science Service:

- 1) Beginning of intensive development of the "hydrogen" superbomb.
- 2) Dating of archaeological objects up to 25,000 years old by radiocarbon atomic "calendar" with consequent re-dating to about 10,000 years ago, the last Ice Age and arrival of man in America.
- 3) Inauguration of weather forecasts for thirty days ahead by U. S. Weather Bureau, issued twice a month.
- 4) Decision by FCC authorizing commercial broadcasting of color television.
- 5) Measurement of seven factors of temperament: impulsiveness, pressure for activity, masculinity, dominance, emotional stability, sociability, and reflectiveness.
- 6) Development of new blood-processing method that separates red cells, white cells, platelets, and essential plasma fractions within six hours.
- 7) Two new elements, No. 97 and 98, created by atomic bombardment and named "berkelium" and "californium".
- 8) Discovery that Proxima Centauri, star nearest solar system, has frequent and gigantic flare-ups.
- 9) Discoveries of a large meteor crater in Quebec and a lofty mountain range on floor of the Pacific.
- 10) Continued successful use of cortisone and ACTH in rheumatic diseases and extension of use to burns, malignant conditions, and inflammatory diseases of eyes and blood vessels.

Use of diethylstilbestrol "tenderizing" is increasing in the broiler industry.

*As a follow-up of the regional conferences, it is planned that the state livestock sanitary official and bureau veterinarian in charge for each state will call meetings where similar information will be passed on to representatives of the proper state agencies as the basis for local organization.

Future of Veterinary Service in the United States Air Force

COLONEL WAYNE O. KESTER, V.C., U.S. Air Force

THE AIR FORCE Veterinary Corps is a new organization and the youngest in the veterinary profession. It was established in July, 1949, functioning directly under the Surgeon General of the Air Force, who heads the Air Force Medical Service which was also officially integrated at that time. In definition, it is a corps of officers, all professionally trained graduate veterinarians, organized to accomplish certain highly technical tasks for the Air Force which require knowledge and skills peculiar to the veterinary profession. Functioning essentially as consultants and technical advisors, veterinary officers are assigned to Air Force units throughout that world-wide organization. However, a concentration of veterinary officers is not required in any one area. Consequently, the stature and effectiveness of the Corps must be measured in the terms of quality rather than quantity. Currently, about 150 officers are on active duty, and it is not expected that the Veterinary Corps will exceed the present ratio of officers to total Air Force strength.

PREVENTIVE MEDICINE AND PUBLIC HEALTH

The Air Force, in contrast with early World War II thinking, has widened its concept of the true function and breadth of veterinary science in a military establishment. It will be used in its broadest application in preventive medicine and public health. Veterinary functions will include inspection of all types of food, medical care for animals, medical aspects of food and mess sanitation and nutrition, and particular attention to food-borne diseases and animal diseases communicable to man.

There are several reasons for assigning to the Veterinary Corps a mission of this scope. First, the experience of World War

This is a brief résumé of the veterinary service in the U. S. Air Force—a subject of probable interest to all veterinarians because a trend is developing which may eventually affect or influence many in the profession. In the task of bettering and safeguarding the health of the Air Force, great impetus is being given to the employment of veterinary personnel in preventive medicine and public health type work.

Colonel Kester is chief, Veterinary Division, Office of the Surgeon General, headquarters, U. S. Air Force.

II demonstrated that the Veterinary Corps, by assuring food of proper wholesomeness and quality, could safeguard both the health of troops and the government's financial interests. The responsibility of the veterinarian was originally restricted to foods of animal origin and terminated at point of issue to troops. Commanding officers, especially in overseas theaters and in the Air Force, soon discovered that inspection coverage was inadequate and promptly corrected the situation by directing the Veterinary Service to extend its inspection activities to include all types of food and, where available, to exercise sanitary surveillance over all food supplies until consumed in the unit messes. This action soon became policy with the Air Force and has since been in practice. In procuring, shipping, preparing, and serving food for airmen, problems in sanitation and conservation are essentially the same whether the food be meat, fruit, or vegetable.

Another important fact is that food hygiene is of even more consequence in the Air Force than in other organizations, and even under normal peacetime conditions requires constant critical surveillance. One who has witnessed explosive outbreaks of food infection or intoxication, with a high percentage of prostrate and extremely sick patients, needs no imagination to visualize what would happen should a crew on a B-36, or any other plane for that matter, suddenly be stricken with an acute case of *Staphylococcus* poisoning while in flight. Such things can and will happen unless proper precautions are taken. History teaches that outbreaks of food-borne diseases have altered more than one battle plan; have, in fact, determined the outcome of campaigns.

Still another factor is the shortage of doctors in the Air Force during the past five years. It was only natural that all possible medical inspection and other preventive medicine work be assumed by veterinary officers. Mainly by the addition of a few more enlisted technicians to his food-inspection unit, the veterinarian could take on the added responsibility without materially increasing his own workload. It also

became evident that the best, if not the only, way to develop a preventive medicine program with efficient over-all coverage was to have it become largely a veterinary function under the surgeon at base level. No other group or corps can give this vital program the continuity of thought and attention it must have in the field.



—Official U.S. Air Force Photo

Fig. 1—All foods consumed by the Air Force are inspected for wholesomeness and quality by the Veterinary Service. Colonel Kester (right) observes Major Robert W. Day, Bolling Air Force base veterinarian, demonstrate some of the finer techniques of meat inspection.

The young veterinarian of today receives as much training in preventive medicine as does the young doctor. He is taught to think in terms of mass treatment and disease prevention rather than in terms of the individual case. He is taught the importance of good feeding, nutrition, sanitation, and quarantine. He has the background for and, in the service, rapidly develops a well-rounded knowledge of food technology and production, of food hygiene, inspection techniques, and general sanitation. He is versed in the diseases of animals and in food-borne diseases. Although not versed in the specific diseases of man, when teamed with a surgeon who is, he becomes invaluable and capable of spearheading the preventive medicine program at any Air Force base or unit in the field.

THE TRAINING PROGRAM

The training program is influenced by the

foregoing. Under present circumstances, much of it is restricted to study and learning by the individual while on the job, utilizing training guides and references made available to him. The effectiveness of such training can be no better than the individual makes it. It is believed that veterinary officers newly reporting for duty during this emergency will quickly attain such added training as they may need and will soon discover (probably to their own surprise) that they are the best qualified individuals available in the Air Force to carry out the vital mission set forth above.

The on-the-job type of training program is one of expediency and one with which we are not satisfied. It is expected that a special school for Air Force veterinary officers will be established. Training in military veterinary food inspection will be continued at the Army Meat and Dairy Hygiene School in Chicago. Training for officers at the Army Medical Center will be revived and the program of detailing veterinary officers to civilian colleges for graduate work will be pursued vigorously. About 25 per cent of the regular corps now have the Master of Public Health degree, and it is expected that this percentage will more than double in the future.

An interesting and unique research and teaching program lies ahead. The Air Force hopes, eventually, to establish an aeromedical center, where all aeromedical research and training may be conducted. Such work is now being done at several places, chiefly the School of Aviation Medicine, Randolph Air Force Base, Texas; the Air University, Montgomery, Alabama; and the Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. At all three places, veterinary officers are engaged in teaching and limited research in problems of in-flight feeding, food hygiene and nutrition, and global preventive medicine. There are also problems concerning the airlift of animals and food supplies, use of airborne equipment, studies in radiologic defense and atomic medicine, and many others.

The program is just getting under way but a small staff of officers specialized and interested in this type of work is gradually being developed. Some are now attending civilian colleges and others will do so later. The ultimate objective is to have a veterinary facility at the planned aeromedical center capable of providing and supporting such activities and services as (1) research analysis as well as basic and applied research and development within the scope of veterinary science of interest to the Air Force; (2) specific training for Air Force veterinary officers and airmen; (3) training for all other Medical Service personnel attending schools at the aeromedical center in veterinary and related subjects in fields such as food sanitation and nutrition, general sanitation and quarantine, communicable diseases of animals and man, virology, bacteriology, and parasitology; (4) support and

assistance in all activities involving the operation of vivariums and the use of laboratory animals; (5) supervisory and consultant service for an Air Force-wide veterinary laboratory service; and (6)—most important of all—the genuine integration of veterinary science and skills into medical science research teams and medical training at the center.

DUTIES OF AIR FORCE VETERINARIAN

The job of the veterinarian at an Air Force base will continue to be an interesting and important one. With his small unit of veterinary and sanitary technicians, he will be directing veterinary and preventive medical activities. Usually, there will be only one veterinary officer at a base and since no medical field service can be any stronger than its preventive medicine program he will become a most valuable advisor on the surgeon's staff. He will be engaged in all types of food inspection and food service sanitation including the sanitary surveillance of milk supplies and food-producing establishments. Small animal clinics, general sanitation, and other related preventive medicine activities will also require his attention. Rarely will he be engaged in meat inspection at point of origin in packing plants and large cities. This is a joint Army-Air Force responsibility, but the bulk of such inspections will continue to be done by the Army Veterinary Corps which has established a most enviable record in this field.

A high percentage of officers will serve as base veterinarians in various parts of the world, about one-fourth of them overseas. Their role as members of the U.S.A.F. Global Medical Service team is unique. The challenge presented by these problems in preventive medicine and public health for this world-wide organization is such that their position will grow in diversity, interest, and effectiveness.

It should be stated that there is also the need for animal service in the Air Force. One might assume that animals are of no importance in the Air Force but such is not the case. There will always be some animal service problems. The airlift of animals, the use of dogs in arctic air rescue work, the usual military use of war dogs, the traffic in pet animals, and the ever-present threat that a globe-hopping plane may inadvertently introduce some exotic disease make it imperative that animals and

their diseases be given serious consideration. Quarantine is of special concern and every base veterinarian considers himself on the front line of defense in protecting the livestock industry and our population from diseases which might be transmitted through the medium of aircraft or air cargo.

The importance and place of veterinary science are well understood in the Air Force. There must be a corps of well-qualified and specialized officers whose chief interests are preventive medicine and public health. The corps also requires officers interested and specialized in research and teaching. The mission, program, and progress set forth above forecasts the future. It offers untold opportunities for exploration and development, and the eventual stature will be limited only by the capabilities of the men of the veterinary profession who are in that service in the future.

Unsung Heroes

A small platoon of German Shepherd dogs, locally acquired and trained, is playing its part to slow the Chinese offensive, according to Fred Sparks, 1951 winner of the Pulitzer prize in journalism. Attached to the first line of the infantry regiment, they are the rebirth of the famous K-9 Corps of the last war and have already sniffed out the Chinese foe many times (in Korea), according to Mr. Sparks. Recently, Corporal Robert Tracy, of Portland, Maine, was posted with his dog Rex in a foxhole 300 yards before our main position. Suddenly Rex became rigid and whined low in his throat (the dogs are trained not to bark). Corporal Tracy reported to regiment. Soon after, artillery shelled the area. More than 15 enemy Chinese were killed. On another occasion, Corporal Ted Nickolby, of Yonkers, N. Y., was patrolling before our lines with his dog Red and a few other "doughfoots." Red tore at his leash and pointed forward like a bird dog. Reinforcements were brought up. A semicircular trap was prepared. A ten-man Chinese patrol walked into the net and the shooting fury that followed was thoroughly smashed.

The dogs are fed only once a day and they always work with the same G.I. Fortunately, the enemy with his heavy rice diet gives off an odor quite unlike an American G.I.

Some Clinical Aspects and Therapy of the Acute Radiation Syndrome of Veterinary Clinicians

LIEUTENANT COLONEL JOHN H. RUST, V.C., U. S. Army

IN THE FINAL consideration, the clinical veterinarian wants to know what can be done to save an animal. Other considerations are important in deciding whether it is feasible to attempt to save any particular beast. A means of salvage is a most useful bit of information. Unfortunately these are few in number and are rather unsatisfactory. Any type of nonspecific supportive treatment is of value and can not be minimized. Specific clinical approaches to the problem are not yet satisfactory, though in the laboratory some agents show promise of leading to the mechanisms of acute radiation syndrome.

Barron¹ observed that sulphydryl enzymes were readily oxidized by radiations and suggested that since it was possible to reactivate these enzymes by reducing agents, provided the dose was moderate, cysteine and glutathione might be of value in alleviating the acute radiation syndrome. Cysteine was tried by Patt² with considerable success, and at present he is studying the mechanism of action. In addition, Cronkhite,³ and Dauer, Budy, and Rust,⁴ have found that glutathione can reduce radiation mortality in mice. Unfortunately, in most cases, the drug must be administered before irradiation.

Ellenger⁵ has been a vigorous proponent of adrenal deficiency as a cause of radiation death, relating the adrenal response as an effect of direct or indirect stress. He has reported success using desoxycorticosterone acetate.

Ellenger⁶ suggested the possibility that radiation sickness is due to the release of histamine. He felt that, after he administered histamine to animals, there was a response similar to radiation sickness. So, basing their rationale upon this concept, Field,⁷ Cronkhite,⁸ Uncapher and Jordan,⁹ and Kohn *et al.*¹⁰ used rutin, a flavinoid, as an antihistaminic agent with equivocal results. Larkin¹¹ tried atropine alone to see

if the alleviation of the radiation syndrome might be from the atropine effect of the rutin. It did not give protection.

Spies¹² suggested that, since the effect of roentgen therapy on pellagra patients was more severe than normal, the addition of the B complex vitamins to the diet might minimize radiation sickness. He tried daily supplements of thiamine, pyridoxine, inositol, riboflavin, niacinamide, calcium pantothenate, and choline to reduce the number succumbing to fatal radiation sickness. These agents also were only satisfactorily administered before treatment with roentgen rays.

Of great interest, because it was possible to use and reduce the mortality in mice after irradiation, were the findings of Cronkhite¹³ and Miller *et al.*¹⁴ that the antibiotics were valuable. Cronkhite, using penicillin on goats, was not as successful as Miller was using streptomycin on mice. These findings have stimulated much work with the various antibiotics as a possible postirradiation treatment agent. It is felt that such a method counteracts a septicemia.

Another hypothesis is that of Warren and Whipple¹⁵ who thought that the acute radiation syndrome might be due to the damaging effect upon the gastrointestinal tract. So far, nothing has been done to utilize this therapeutic approach.

Allen and Jacobson¹⁶ successfully reduced hemorrhage due to heparinemia of radiation by the use of toluidine blue and protamine. Later, Jacobson *et al.*¹⁷ demonstrated that animals suffering from a phenylhydrazine-induced anemia survived irradiation better than normal ones. This and other work with hypoxemia as a means of protection stimulated Storer and Coon¹⁸ to use para-amino-propiophenone to produce a marked hypoxemia in mice. This served to protect them from irradiation with roentgen rays.

Cronkhite¹⁹ summarized the present-day concepts of the therapy in the acute radiation syndrome. It is initiated by protoplasmic injury by one of the following mechanisms: (a) enzyme inhibition, partic-

From the Toxicity Laboratory, University of Chicago, Chicago 37, Ill. This is the fourth of a series of five articles on atomic energy by Colonel Rust.

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ularly the sulphydryl enzymes; (b) alterations in the osmotic properties, or cell permeability; (c) protein denaturation; (d) intoxication with histamine-like products believed to be liberated by radiation.

In whole body radiation, there is a reciprocal relationship between the degree and reversibility of the enzyme inhibition, protein denaturation, osmotic properties of the cell, and cellular permeability. As the dosage increases, the degree of irreversibility decreases and the mortality rises. Complete mortality occurs in the vicinity of 3,200 roentgen units (r) in a mouse colony.

Toxic symptoms develop immediately after, or during, diffuse radiation. These are nausea, vomiting, diarrhea, malaise, and a slowly progressive leucemia. Physiopathologic manifestations involving the adrenal function, the adaptation syndrome, the intoxication by histamine-like substances, and bacterial invasion will occur later. Finally, panleucopenia and hemorrhagic symptoms develop four to six weeks after the radiation. Capillary fragility and clotting defects also may occur at this time.

Cronkhite then classifies the therapeutic approaches in this manner: (a) sulphydryl agents to reverse enzyme inhibition; (b) antihistamines to neutralize toxins; (c) adrenal hormones to replace losses in function; (d) agents to maintain the water and electrolyte balance; (e) prophylactic treatment with antibiotics in the presence of granulocytopenia; (f) prevention and therapy of anemia; (g) treatment of hemorrhagic tendencies; (h) prevent or remedy the loss of tissue and a negative nitrogen balance.

It is well to end this paper with a quotation from the final paragraphs of Hall's excellent summary, "It is true that no real means of pharmacological intervention in the damage that has been done has yet been brought forth. There seems to be more possibility along pretreatment lines. Of course, this is an important field from the standpoint of pretreating persons required to take a calculated radiation risk, as for example, recovery and evacuation teams at the site of a pile or bomb disaster.

"It does appear, however, that pharmacologic intervention in radiation damage, even after the damage is done, is a possibility of the future. The most sensible approach to this is good fundamental research into the mechanisms of damage. This is going forward in all parts of the

world. When more is known of these fundamental reactions, the way to therapy will be clear."

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SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Intravenous Ether for General Anesthesia in the Bovine Animal

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St. Paul, Minnesota

IN JANUARY, 1950, Dr. E. O. Longley of England published two papers on general anesthesia in the horse. The first of these papers was on the use of pentothal sodium for anesthesia of short duration.¹ The second publication dealt with the use of pentothal sodium for the induction anesthetic and intravenous ether for the maintenance anesthetic.² Dr. Longley stated that he had not used intravenous ether in cattle.

Since the results published on anesthesia with intravenous ether in the horse were very favorable and since it is generally conceded that a satisfactory general anesthetic has not yet been discovered for cattle, the intravenous administration of ether was tried. This article constitutes a report on its use in 14 bovine subjects.

METHOD

The first 8 animals, all over 6 months of age, were purchased by the anatomy department of Minnesota's School of Veterinary Medicine to be used in student laboratory studies following embalming. Prior to isolation of the carotid artery and other embalming procedures, these animals were anesthetized to the surgical stage. Six subjects were not allowed to recover from the anesthesia. Two were permitted to recover from the effects of the anesthetic, 1 after having undergone two hours of experimental brain surgery.

The next 6 animals subjected to intravenous ether anesthesia were calves under 6 months of age, which underwent structural abdominal surgery in order to be made suitable for experimental purposes.

The method used is only in part patterned after that employed by Dr. Longley in his work on horses. He gave enough thiopentone (pentothal sodium) by rapid intravenous injection to the

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standing animals to cause them to go down. When this induction anesthetic began to wear off, the administration of intravenous ether was begun.

For this report, the animals were first cast in the conventional manner, or manually restrained in lateral recumbency and then were given intravenous pentobarbital sodium (nembutal,[®] Abbott) for the induction anesthetic. Dosages of the pentobarbital solution (1 gr./ml.) varied from 5 to 10 ml. for animals weighing less than 200 lb. and from 10 to 30 ml. for animals above that weight. The 30-ml. dosage was only used on mature animals. Intravenous injection of the pentobarbital sodium was accomplished in ten to twenty seconds. In most instances, this procedure, within three to five minutes following completion of the injection, resulted in moderate relaxation of the patient and cessation of struggling. At this point, intravenous administration of the ether solution was begun. On 3 of the older animals, no pre-ether anesthetic was used.

The ether was given as a 5 to 6 per cent solution in physiologic saline. Solutions of a concentration greater than 7 per cent of ether are reported to be deleterious to experimental animals.³ If the ether and saline are mixed at temperatures between 25 and 30 C., there is no danger of getting too high a concentration of ether into the solution, since its solubility in saline at these temperatures is between 6.0 and 5.3 per cent. The solubility of ether in saline increases as the temperature is lowered.

The ether-saline solution was prepared in 2-liter flasks. If the operation took more than fifteen minutes, quite large quantities of ether-saline were needed; so several flasks of solution were prepared in advance. However, in a matter of a few minutes, measured amounts of ether can be added to saline and mixed as more solution is needed.

The flask, equipped with intravenous tubing, was suspended 3 ft. above the patient. Administration of the ether-saline solution, which was begun within three to five minutes after giving pentobarbital sodium, was via the jugular vein through a 16-gauge needle. The needle, attached to the intravenous outfit, was left in the vein throughout the entire operative procedure. The rate of gravity flow of solution was regulated by

an adjustable tubing clamp. Until the animal was in the stage of surgical anesthesia, a rapid flow of solution was required. After arriving at this stage, a slow, constant drip was used. Periodically, a faster flow was sometimes needed to maintain the desired stage of anesthesia. Depth of anesthesia was judged by presence or absence of spontaneous movements, by degree of muscle relaxation, and by the auricular reflex.

RESULTS

On those animals anesthetized for ten to fifteen minutes prior to the embalming process, good surgical anesthesia was attained. The cutaneous reflexes were absent and there was satisfactory muscular relaxation. After the initial, rather rapid infusion of ether-saline until the stage of surgical anesthesia was reached, no additional anesthetic was needed. The 1 animal allowed to recover from the effects of the anesthetic without having undergone any surgery was able to assume the position of dorsal recumbency at the end of twenty minutes, and was standing and ruminating after seventy minutes. The subject that served for an experimental brain operation was satisfactorily anesthetized for two hours. The volume of ether-saline used for this procedure was 2,200 ml. Recovery from the effects of the anesthetic was good. Fifteen hours later, this same animal was re-anesthetized for embalming purposes.

The 3 animals that underwent anesthesia without any pre-ether medication presented quite a problem. It was difficult to get them through the induction stage, during which time considerable excitement was displayed. The difficulties arose from not being able to give the infusion at the desired rate in an animal that was struggling and constantly dislodging the needle from the vein. In this series of 8 cattle, no deaths resulted which could be attributed to anesthesia.

The next 6 animals were calves, some of which were anesthetized for splenectomies, and others for an operation for the establishment of an abomasal fistula. Results here were not as encouraging as with the 8 animals first discussed. The maintenance of the surgical stage of anesthesia was difficult. A slow, constant intravenous drip was used (following attainment of surgical anesthesia); nevertheless, after approximately fifteen minutes, the animals would suddenly begin making reflex and spontane-

ous movements. From this time on, the administration of more ether-saline seemed to have erratic effects. Either the animal remained in the stage of very light surgical anesthesia or anesthesia became profound enough to approach the toxic stage. Two calves, without presenting any observable symptoms of oncoming danger, approached the toxic stage and died from the effects of the anesthetic. One died after having been anesthetized for twenty minutes by the intravenous use of 700 ml. of ether-saline; the other died after thirty minutes, in which time 1,800 ml. of solution had been used.

Two observations were apparent: (1) Recovery from the anesthetic was rapid enough to require frequent and sometimes rather large doses of ether solution in order to maintain good relaxation, thereby making control of the level of anesthesia most difficult. This was especially noticed in the young animals. (2) The margin of safety between the surgical stage and the toxic stage was narrow.

DISCUSSION

It was hoped that the large volumes of dilute ether would afford a considerable degree of safety with regards to the use of the anesthetic. This did not prove to be the case. It should, however, be noted that the 2 deaths occurred in the younger animals. Each calf was 3 months of age. One possibility of value arising from the use of large volumes (up to 3,000 ml.) of saline solution might be seen in its ability to prevent postoperative shock.

Mention should also be made of the observation that the younger animals appeared to present more difficulties with regards to control of the level of anesthesia. The possibility exists that the young animal is more susceptible to the toxic effects of this type of anesthesia and also more prone to fluctuations in maintenance of the desired level of anesthesia.

Perhaps thiopentone (pentothal sodium) or some other barbiturate as an induction anesthetic would give results more promising than those with pentobarbital sodium (nembutal) as used in these trials.

If satisfactory results can be obtained by further trials and studies with regard to intravenous ether anesthesia in the bovine animal, the following advantages deserve mention: (1) Recovery from anesthesia is

rapid. (2) Regulation of desired anesthetic levels can be controlled at the command of the operator by merely having an assistant change the rate of intravenous drip. (3) The infusion of saline may favorably serve to increase body fluids and prevent post-operative shock.

SUMMARY

Intravenous ether was used for general anesthesia in 14 bovine subjects. Pentobarbital sodium, given by rapid intravenous injection, was employed as the induction anesthetic. Two anesthetic deaths resulted. In some of the animals, difficulty was experienced in maintaining the desired level of anesthesia.

Certain advantages as measured against other general anesthetics in the bovine animal are mentioned. In view of the advantages, further studies on the use of intravenous ether might be justified.

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Obstetrics in Swine

In a rather exhaustive treatise on "Porcine Obstetrics" (*Vlaams Diergeneesk. Tijdschr.*, 19, 1950), the author submits the following summary: Under present conditions, obstetrics in swine is important in country practice. In the author's opinion, forced extraction in general is the most suitable method for practitioners not handicapped by heavy hands or arms, because it gives good results in a cheap and simple way. In 55 sows, 50 parturitions were terminated with this method. This was not possible in 5 aborting sows where the pigs were emphysematous. Besides these 5 cases, 2 sows died from shock and 6 deaths were caused by lesions of the genital tracts of which 3 were due to extraction of a number of too heavy pigs. Thus, 76 per cent of the sows recovered and the majority of the pigs lived.

In general, it is preferable to work with the sow in a recumbent position. In many cases, it is necessary to lubricate the genital tract by infusions. The pigs pinched with the head or shoulders in the anterior

pelvic ring can be pulled out without danger to the sow. In many cases, manual intervention is sufficient; when this is impossible, the author uses hooks of special construction. With the pig in anterior presentation, he fixes 2 of them in the orbital cavities and 1 behind the body of the lower jaw from the outside.

In posterior presentation, the hooks are inserted behind the tendon of Achilles. The lesions caused to the pigs by the hooks are of little importance and heal spontaneously. In cases where the genital tract is already badly damaged by lay intervention and, even more, when large numbers of heavy pigs are left in the uterus, cesarean section would be more advisable.—L. VAN ESS.

Phenol in Topical Anesthesia

University of Chicago investigators report that anesthesia of the intact skin can be produced by application of a cotton pledge moistened in a 5 per cent phenol solution or a saturated aqueous solution of phenol. The saturated solution produces skin anesthesia in 5 to 7 minutes, and the effect lasts for 5 to 15 minutes after removal of the pledge. Erythema lasting about twenty-four hours may result, and whitening of the skin may persist for several days afterward. Danger of systemic poisoning due to absorption is negligible.—*Cur. M. Dig.*, Feb., 1951.

Hormones and Mammary Gland Development

Mammary gland development may be accelerated in very young dairy heifers by hormone injections. The type of development and the sequence of developmental stages produced by stilbestrol or stilbestrol and progesterone were distinctly modified by the injection of a crude extract of the pituitary gland. Udders developed as a result of hormone injections appeared more mature structurally than the udders of heifers injected with steroids only.

The authors (Sykes and Wrenn) suggest that very young dairy heifers may be particularly suitable experimental subjects for determining the effects of the several hormonal factors which appear to participate in udder development of the bovine animal.—*J. Dai. Sci.*, March, 1950.

Radiographic Findings in a Fracture of the Sacrum in a Bull

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A 16-month-old Holstein-Friesian bull, used for breeding, was admitted to the large animal clinic of the Division of Veterinary Medicine, Colorado A. & M. College, with a history of paralysis of the tail and

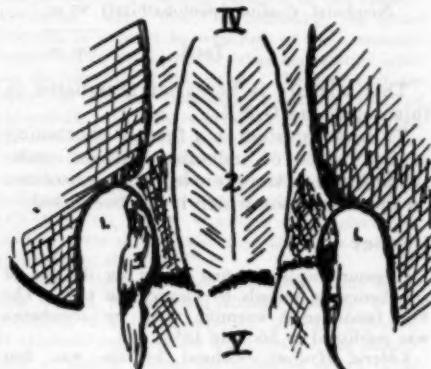


Fig. 1—This radiograph shows: 1. ventral sacral foramina; 2. median crest; 3. lateral crests; IV. fourth sacral segment. V. fifth sacral segment. The fracture line extends across the sacrum between the last two sacral segments, involving both portions of the lateral sacral crests.

weakness in the hindquarters. He had been recently purchased and the condition was noticed shortly thereafter.

Examination of the bull revealed no evidence of external trauma or abnormality in the region of the pelvis or sacrum. The bull had a slight prominence over the tail head. Without motor or sensory innervation, the tail could not be elevated and fecal material was retained beneath it. Rectal examination disclosed a discrepancy in the size of the ventral sacral foramina between the last two sacral segments. In the enlarged right ventral sacral foramina, pain could be elicited with mild digital pressure. Four days later, the bull was given an epidural anesthetic and the rectum was emptied. A dental occlusal film, wrapped

in a rubber glove, was placed in the rectum under the area of tenderness. The x-ray tube was placed over the area approximately 18 in. from the film, and the film was exposed at 85 Kvp and 20 Mas.*

The film (fig. 1) revealed an irregular line extending across the sacrum between the last two sacral segments and involving both portions of the lateral sacral crests. A tentative diagnosis of fracture was made.

Nineteen days later, another plate (fig. 2) was taken and a heavy callous formation

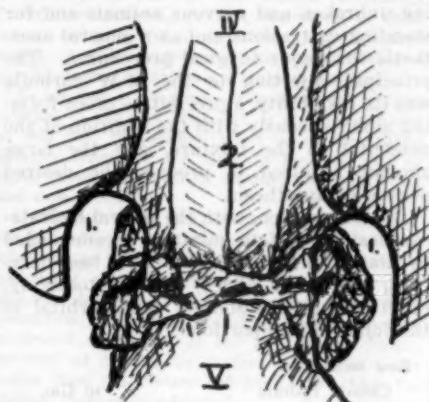


Fig. 2—This radiograph shows: 1. ventral sacral foramina; 2. median crest; 3. lateral crests; IV. fourth sacral segment; V. fifth sacral segment. Note heavy callous formation across the fracture line.

was noted across the previously irregular fracture line. Sensation was returning to the tail and the bull could switch it weakly at the time of the second radiograph. Six days later, he was discharged with approximately 50 per cent of normal mobility in the tail. The owner reported complete recovery twelve weeks following the onset of the condition.

Every stillborn pig represents a loss of 130 lb. of sow feed. Every pig lost at weaning age means a loss of 240 lb. of feed. Add this loss of feed, to say nothing of labor, to the value of swine lost and the importance of curbing baby pig losses is readily seen.—A. H. Quin, D.V.M., *Vet. Med.*, April, 1951.

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*Kvp means kilovolt-peak; Mas means milliamperes seconds.

Large Animal Anesthesia

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THIS IS A report on an anesthetic developed and used in the large animal clinic in the State College of Washington during 1948 and 1949. During the winter of 1947-1948 the Millenbruck-Wallinga (M-W) formula^{1,2} was tried out, both for sedation in examining unbroken and nervous animals and for standing castrations and as a general anesthetic for major surgical procedures. The principal objection to the M-W formula was its instability, a precipitate often forming simultaneously with the addition of the nembutal to the mixture, and the large amount required to produce the desired degree of anesthesia.

Beginning then, with the chloral hydrate-magnesium sulfate mixture recommended by Danks,³ and using this as a base mixture, there was added, after autoclaving, ethyl alcohol and sodium pentobarbital in the following proportions:

Base mixture:

Chloral hydrate	30 Gm.
MgSO ₄	15 Gm.
Distilled water q.s. ad.	—
	350 cc.
Ethyl alcohol	100 cc.
Nembutal® (Abbott) (sodium pentobarbital)	50 cc.
	—
Total	500 cc.

This mixture is in this report hereafter designated G-1-X.

By trial and error, it was determined that 50 cc. of sodium pentobarbital could be held in solution in 350 cc. of base mixture by the addition of 100 cc. of ethyl alcohol, resulting in a stable product. The amount of this mixture required as compared with the M-W formula was estimated to be one third to one half less. Induction was easy and fairly rapid; the lethal dose was high; there was complete absence of excitement; and recovery was fairly rapid and complete.

Recently, the percentage of the various ingredients of the mixture has been increased as follows:

Base mixture:

Chloral hydrate	60 Gm.
MgSO ₄	30 Gm.
Distilled water q.s. ad.	—
	350 cc.
Ethyl alcohol	100 cc.
Nembutal (sodium pentobarbital)	50 cc.
	—
Total	500 cc.

This mixture is hereafter designated in this report as G-2-X.

This has resulted in a further shortening of the period of induction without undesirable side actions or injection abscesses on the cases upon which it has been used.

HISTORY

Gilmour⁴ made the first report on the use of anesthetics on animals by Flourens in 1847. The first fundamental scientific work on anesthetics was published by Snow in 1858.⁵

Chloral Hydrate.—Chloral hydrate was first made by Liebig in 1832.⁷ By using chlorine as an oxidizing agent on alcohol, chloral (Cl₃CHO), an oily liquid, is formed. Hydration of the chloral yields chloral hydrate (CCl₂CH(OH)₂), a crystalline substance. It is the oldest member of the hypnotic group and still one of the cheapest and best.

Liebrich,⁸ in 1869, was led to try chloral hydrate as an anesthetic by the assumption that it would be converted into chloroform in the organism, as it is by alkalis in the test tube. The theory was disproved; the blood and expired air contain no chloroform or, at most, insignificant traces.

Chloral is listed as a hypnotic and sedative, a group of compounds having the same general action as the anesthetics but used only to produce the first effects of imperfect consciousness or sleep in human medicine.¹⁰ Bastedo¹¹ lists chloral hydrate as a nonanalgesic hypnotic; a mild hypnotic whose power to abolish pain is not pronounced. In animal experiments, it was found there must be profound narcosis before there is any perceptible diminution in the response to painful stimuli.

The central nervous system is depressed and eventually paralyzed by chloral hydrate. Unlike the volatile anesthetics and alcohol, however, chloral rarely causes excitement. The last part of the central nervous system (C.N.S.) to be attacked is the medulla oblongata, for although the respiration is somewhat slower and shallower after small quantities, it is scarcely more affected than in ordinary

From the College of Veterinary Medicine, State College of Washington, Pullman.

sleep, and both the excitability of the center and the volume of inspired air are similar in the two conditions.¹¹ The heart is slower after chloral hydrate in moderate doses but scarcely more so than in natural sleep. The blood pressure is but little affected in the therapeutic use of the drug.¹²

Chloral, in a toxic dose, is a circulatory depressant acting most strikingly to depress the vasoconstrictor center and the muscles of the arteries. Circulatory depression may supervene in only slightly larger than hypnotic doses on human beings. Sollman¹³ states that "vasomotor paralysis is so prominent that chloral is used in the laboratory to produce paralysis of this center." Grollman¹⁴ states that "In poisoning, the blood pressure is reduced by weakness of the vasomotor center and of the heart, the latter manifesting itself in the slowing of the pulse. The action of the heart in chloral poisoning resembles that of chloroform, the auricles being affected sooner than the ventricles and the strength of the contraction failing more than the rate."

It has generally been accepted that chloral is reduced in the tissues to trichloroethyl alcohol ($\text{CCl}_3\text{CH}_2\text{OH}$) which combines with glycuronic acid to form urochlorallic acid and is excreted in this form in the urine.¹⁵

Adams¹⁶ has disproved the long held theory that chloral hydrate and alcohol resulted in the formation of a toxic compound, chloral alcoholate. If alcoholic solutions are administered, the absorption of chloral (from the digestive tract) is increased, but it is doubtful if chloral alcoholate can be formed in the body.

The undesirable side-effects of chloral on tissues correspond to those of chloroform but are very slight. Fatty degeneration of various organs in animals has been caused by the prolonged administration of large doses. There is evidence of renal involvement, i.e., red cells and casts in the urine. Chloral was formerly supposed to lead to glycosuria but this is no longer accepted.¹⁷

Much has been written concerning the use of chloral hydrate in veterinary medicine. Most early writers preferred giving it *per os* or *per rectum* in solution due to its local irritating action when injected subcutaneously or intravenously in strong solution.^{18,19} Muir²⁰ first reported on the successful intravenous use of chloral hydrate in animals in 1900, using 1 oz. in 2 oz. of sterile water, a much stronger concentration than is now considerable desirable.

Winslow²¹ recommends that chloral hydrate be combined with morphine and atropine for general anesthesia (3 gr. morphine sulfate and 1 gr. atropine sulfate subcutaneously) as morphine decidedly enhances the anodyne action of chloral.

Frank²² recommends a 7 per cent solution for intravenous use.

Bemis, Guard, and Covault²³ do not mention intravenous chloral anesthesia and do not class chloral as a general anesthetic except for swine. Fowler²⁴ recommends using a 12.5 per cent solu-

tion intravenously with a tomcat catheter to prevent perivenous infiltration after first giving a basal of chloral solution via stomach tube.

Goffinet²⁵ recommends intravenous chloral as a general anesthetic in equine surgery. He further recommends 0.6 to 0.9 Gm. of cocaine dissolved in 20 cc. of water to shorten the recovery period.

Alcohol.—Ethyl alcohol ($\text{CH}_3\text{CH}_2\text{OH}$) has been known in an impure form since the earliest times, and as far back as the history of medicine extends, has been used in some form by savage as well as civilized man.

Alcohol is a true narcotic, and it stands in the narcotic series between the volatile anesthetics (which are volatile, prompt, transitory in their action, and powerful in their effects) and the hypnotics, of which a dose must be able to maintain a mild degree of narcosis for several hours.²⁶

As alcohol is an ethyl compound with a close relation to ether ($\text{C}_2\text{H}_5\text{O}$), it is not surprising to find that the alcohol effect upon the central nervous system is the same in kind as that of ether, though modified by its diminished volatility and slower action.²⁷

Grollman²⁸ states that "ethyl alcohol is metabolized directly by the liver and exerts a depressing effect on its functional activities," but the investigations of other workers reported by him would indicate this effect to be transient rather than permanent. The multitude of toxic effects in man attributed to alcohol in the past are no longer believed to be due to alcohol itself, but result rather from the dietary deficiencies to which the chronic drinker is subjected.

Intravenous alcohol anesthesia for animals was described by Nitzescu²⁹ in 1930.

The use of alcohol as a general anesthetic in man has been proposed.³⁰ Patients were given morphine preoperatively one-half hour before the alcohol was administered. In the operating room, a mixture of 1 part of 95 per cent alcohol with 2 parts of 5 per cent glucose was administered by intravenous infusion over a period of fifteen to twenty minutes. The average dose for complete narcosis was found to be 2.0 to 2.5 cc. of alcohol per kilogram of body weight. As a rule, sleep begins after 40 to 60 cc. of alcohol have been introduced. When deep anesthesia has set in, the vein is flushed with 30 to 40 cc. of an isotonic solution of sodium chloride to prevent possible thrombophlebitis. Sleep lasts from two to five hours. When they awaken, patients are irrational and require attention.

Magnesium Sulfate.—Magnesium is an essential constituent of plant and animal tissues. Magnesium sulfate is a crystalline salt of which practically 50 per cent consists of water of crystallization, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$. In dry air, it gradually loses some of its water and becomes a white powder.

The magnesium salts are listed as osmotic cathartics³¹ but much work has been done on the effects of parenteral administration.

The parenteral administration of magnesium

salts results in marked depression of both the central nervous system and peripheral neuromuscular apparatus.¹² Peripheral neuromuscular depression has been a noticeable effect of several of the cases reported in this article. The animals given sedative doses lie quietly and submit to minor surgical procedures without struggling and without showing any symptoms of anesthesia. Upon being let up, they walk off without staggering and upon being returned to the stall, they stand quietly.

Magnesium parenterally is almost entirely eliminated by the kidneys.¹³ The intravenous or intramuscular injection of magnesium sulfate into dogs results in the appearance of hyaline casts in the urine.¹³

Meltzer and Auer²¹ first reported on general anesthesia with abolition of reflexes using a subcutaneous injection of a 25 per cent solution of magnesium sulfate (1.5 Gm. of MgSO₄ per kg.). There is very little pain, since magnesium is also a local anesthetic. Anesthesia occurs within one-half to one hour and lasts about two hours, but the effective dose is so near the fatal dose that it is not recommended for man. It has been used intraspinally in convulsive conditions. Death from a toxic dose of magnesium parenterally occurs as a result of respiratory failure.¹¹

The curare action of magnesium was discovered in 1869²² and confirmed by Meltzer²³ and others. Meltzer, in 1913, recommended a combined ether-magnesium anesthesia for laboratory animals.

Magnesium-calcium antagonism *in vivo* is recorded by all writers reviewed,^{6, 7, 11, 22} and the use of calcium as an antidote for magnesium is recommended. The mechanics of this antagonism are not understood.⁶

The first recorded use of magnesium sulfate as an anesthetic and to potentiate chloral hydrate in veterinary medicine is a report by Kerguntul and Bachirou²⁴ who recorded its successful use on the African ass. They used 10 Gm. of chloral and 10 Gm. of MgSO₄ per kilogram of body weight in normal salt solution, 1:10.

Danks³ recommended the addition of magnesium sulfate to chloral hydrate (12% chloral, 6% MgSO₄) to reduce the tissue irritation and reflex irritability, and reported the use of the mixture on both horses and swine.

Pentobarbital.—In 1903, Fischer and von Mering¹⁵ introduced the first barbiturate (veronal) to the medical profession. It has been estimated that there are more than 1,200 homologues of this substance; more than 100 studied pharmacologically and 30 recommended for therapeutic use.

If urea reacts with malonic acid, barbituric acid is formed. By the alteration in chemical configuration, the various barbital derivatives are created. The barbiturates occur as white crystalline powders of somewhat bitter taste. The free acids are but slightly soluble in cold water, fairly soluble in hot water, and soluble in alcohol. The

sodium salts are freely soluble in water but decompose on standing.

Barbital is classed as a hypnotic and sedative¹⁶ and its derivatives classified in the order of the duration of their effect as either long, intermediate, short, or ultra short. In this classification, pentobarbital is listed as a short-acting barbiturate.¹⁶

The barbiturates are not analgesics and can not be depended upon to produce sedation or sleep in the presence of pain.¹³

The excretion of the barbiturates occurs practically exclusively by the urine; the feces contain only traces.¹³

The barbiturates have enjoyed such wide popularity in veterinary medicine within the last decade, that the many uses of the drug need not be enumerated here. The popularity of sodium pentobarbital in small animal general anesthesia and as a sedative for large animals has undoubtedly been well deserved. The long recovery period of the drug when used as a general anesthetic in large animals precludes its use for this purpose.

The first recorded use of sodium pentobarbital in a general anesthesia mixture for large animals that the author could find was the report by Milenbruck and Wallinga^{1,2} and the concentration of sodium pentobarbital (nembutal) recommended by them has been used in the mixture described herein.

DISCUSSION

Procedure and Use.—To date, this mixture has been used clinically on 34 equine and 3 bovine animals. The mixture should be used to effect. The average dosage for horses of all ages is approximately 1 cc./3 lb. of body weight for surgical (general) anesthesia; 1 cc./10 lb. of body weight for sedation. The average dosage for cows for general anesthesia is approximately 1 cc./2 lb. of body weight.

In addition, the mixture was used in operative surgery on 8 horses where the animals were anesthetized from 8:00 a.m. until 5:00 p.m. and then destroyed. Blood pressure recordings were made on 5 of these animals by Dr. P. A. Klavano, of the Department of Physiology and Pharmacology, using a carotid cannula and mercury column B. P. apparatus.

For surgical anesthesia for this period, the dosage varied considerably according to the condition of the animal but averaged approximately 1 cc. per pound of body weight given over the entire period. No attempt was made to bring the animals up at the conclusion of the surgery course.

In the large animal clinic, the mixture was used for euthanasia on 8 horses and 1 cow.

The lethal dose, given rapidly as one dose, was approximately 1 cc. per pound of body weight—three times the dosage for general anesthesia.

Also, the mixture was used by the Department of Anatomy under the supervision of Dr. R. P. Worthman as an anesthetic prior to bleeding out 22 horses and 4 cows.

The dosages used by the anatomy department were approximately the same as those reported in clinical usage.

Stability of Mixture.—The mixture is stable for an indefinite period. One bottle, prepared Aug. 12, 1948, is still clear (May 13, 1949) and shows no indications of decomposition.

The mixture has been put up in clear glass and in brown glass bottles with dome rubber stoppers, metal, and molded plastic screw caps. No observable differences could be detected.

During the recent severe winter, brown and clear glass bottles of the mixture were taken from the pharmacy stock and buried in snow for periods up to forty-eight hours without observable change. The mixture does not freeze or show turbidity at -20 F.

Sterility of Mixture.—Although alcohol and nembutal are added after autoclaving the base mixture for thirty minutes at 15 lb. pressure, repeated bacteriologic examination has shown no bacterial growth on agar pour plates in forty-eight hours of incubation.

CASE REPORTS

Case 2387.—A 6-year-old Guernsey cow, weighing approximately 700 lb., underwent amputation of the right hind leg at the middle tibial region. With the animal lying down, 200 cc. of G-I-X was administered via Simplex apparatus and an 18-gauge, 2-in. needle (slowly); and 20 cc. of 2 per cent procaine was infiltrated locally. The amputation was performed without restraint, and the cow was given 4 liters of 5 per cent dextrose in PSS during surgery. After stump closure, the cow was given 4 cc. of amphetamine sulfate intramuscularly and allowed to remain quiet. The next morning, she was up and eating.

Case 3388.—A 7-year-old Palomino horse (gelding), weighing approximately 1,050 lb., with fistulous withers, was placed on a table; 300 cc. of G-I-X were given via Simplex apparatus and 16-gauge, 1½-in. needle (slowly). Surgery was completed, with no

supportive treatment, in approximately twenty minutes. The horse was removed from the table and walked to stocks unaided. He remained in stocks approximately forty-five minutes, showed no restlessness, and walked to his stall and stood quietly.

Case 4675.—A 2-year-old white colt, approximate weight 500 lb., underwent castration, monorchid, after receiving 200 cc. of G-I-X via Simplex apparatus and 18-gauge, 2-in. needle (slowly). He was cast at 125 cc.; 75 cc. additional was given after tying. He arose unaided in approximately ten minutes, walked to his stall unassisted and stood quietly.

Case 4047.—A 5-year-old piebald stallion, weighing approximately 1,000 lb., was castrated, standing, after receiving 75 cc. G-I-X via Simplex apparatus and 18-gauge, 2-in. needle. The twitch was applied, and the horse was castrated with no struggling. He walked to the stall unaided and stood quietly.

Case 10466.—A 2-year-old colt, weighing approximately 900 lb., with monorchid, was given 100 cc. G-2-X in stocks prior to adjusting harness, using Simplex apparatus and an 18-gauge, 2-in. needle (slowly). An additional 200 cc. was given with the animal standing with harness adjusted. He was cast without a struggle, but there was some straining against ropes during surgery. The animal was allowed to lie quietly approximately thirty minutes following removal of ropes, then it walked unassisted to its stall. It was restless in the stall.

Case 23076.—A 1-year-old heifer, weighing approximately 450 lb., underwent amputation of the right forelimb. After 75 cc. of G-2-X, the animal was cast and 60 cc. of 2 per cent procaine was given locally. During surgery, G-2-X and 10 per cent dextrose were given alternately until a total of 425 cc. of G-2-X and 1,500 cc. of 10 per cent dextrose was given. Approximately 20 cc. of G-2-X was given perivenous; 1 cc. of amphetamine sulfate was given postsurgically. The animal was allowed to lie on the mat overnight. The next day, it appeared bright and was eating. No jugular necrosis was noted during sixteen days of hospitalization following surgery.

SUMMARY

A report is made on the clinical use of an intravenous anesthetic in horses and cows. Dosages used for sedation, narcosis, general

anesthesia, and the fatal dose used for euthanasia are recorded.

CONCLUSIONS

Clinical trial has to date shown the mixtures reported as G-I-X and G-2-X to be satisfactory as large animal anesthetics.

The mixture was not used on swine; a combination of atropine, sodium pentobarbital, and ether has proved satisfactory for this species.

Other than for a small financial saving, the reported mixtures do not appear to have any advantage over sodium pentobarbital alone when used as a sedative only for horses.

The mixtures should be given intravenously at the approximate rate of 20 cc. per minute in order to obtain full benefit from the ingredients in both horses and cows.

Calcium borogluconate (23%) materially assists in shortening the recovery period due to its magnesium antagonism.

Amphetamine sulfate (5%) is recommended as a stimulant to combat collapse or hasten recovery.

Because the urinary system is the chief excretory apparatus involved, fluids should be maintained and postsurgical anuria avoided to minimize toxicity.

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Malnutrition and Infertility in Dairy Cows

Approximately 15 per cent of the dairy cattle of breeding age showed a degree of infertility in a survey in Quebec. It was estimated that the annual loss to dairymen amounted to \$41½ million for the Dominion of Canada for 1946. Malnutrition was considered an important predisposing cause, because it was traced directly or indirectly to 47 per cent of the cases observed.

Pasture was markedly beneficial, probably because fresh grass provides gonadotrophic precursors for the cows.

The general conclusion was that a higher plane of nutrition should be provided to correct and to prevent infertility.—Survey of the Role of Nutrition in Sterility of Dairy Cattle.—*Canad. J. Comp. Med. and Vet. Sci.*, Jan., 1951.

The Artificial Insemination of Dairy Cattle

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SINCE MUCH of the recent literature on artificial insemination (AI) has appeared in nonveterinary journals, many veterinarians have failed to keep abreast of developments. This article is intended to review and summarize some of the more pertinent information.

HISTORY AND DEVELOPMENT

An excellent review of the history of AI is given by Perry.³³ It is said the Arabs used this method of inseminating mares as early as 1322. The first scientific research on the subject was conducted by Spallanzani, an Italian, in 1780. Leeuwenhoek had developed a microscope and reported the discovery of human spermatozoa in 1677. Spallanzani attained success in breeding several amphibious species as well as dogs. As early as 1890, the French veterinarian Requier was using artificial insemination as a treatment for sterility in mares. Ivanoff, a Russian, seems to have done the first work with cattle and sheep at about 1900-1914.

The first AI co-operative for dairy cattle was formed in Denmark in 1936. The first one in this country was organized in New Jersey in May, 1938. The first technician was Dr. J. A. Henderson who was assisted for two months by Dr. K. A. F. Larsen who had done the work in Denmark's first association.

The rate of growth may readily be seen in table 1.

TABLE 1—The Growth of Artificial Insemination in the United States*

Year	States (No.)	Asso- ciations (No.)	Mem- bers (No.)	Cows (No.)	Bulls (No.)
1939	4	6	646	7,539	33
1940	16	27	2,971	23,977	138
1941	16	37	5,997	70,751	237
1942	18	73	12,118	112,781	412
1943	24	99	23,448	182,524	574
1944	20	95	28,627	218,070	657
1945	23	178	41,873	342,496	659
1946	29	336	73,293	579,677	900
1947	36	608	140,571	1,125,040	1,453
1948	42	963	224,493	1,743,327	1,745
1949	45	1,263	316,177	2,412,160	1,940
1950	47	1,460	372,968	2,827,530	2,104

*Taken from USDA Dairy Herd Improvement Association Newsletters, 1939-1950.

Most states are now using what is known as the "federated" system in which all bulls are kept at a centralized barn and semen is mailed or shipped by other means to affiliated local cooperatives.³³ Each local "co-op" hires one or more technicians who breed the cows in that territory.

From the Kentucky Agricultural Experiment Station, Lexington.

States having 25,000 or more cows enrolled in artificial breeding associations are shown in table 2.

Nearly 11 per cent of the nation's 26 million dairy cattle are being inseminated artificially. In New Jersey, more than 27 per cent of the dairy cattle are enrolled.

TABLE 2—States Having 25,000 or More Cows Enrolled in Artificial Breeding Associations*

State	Cows (No.)	State	Cows (No.)
Wis.	411,566	Tenn.	50,967
N. Y.	287,044	N. Car.	49,322
Pa.	233,311	N. J.	44,100
Ohio	216,117	Neb.	41,498
Iowa	192,783	Wash.	40,784
Minn.	189,332	Texas	36,495
Mich.	140,445	Miss.	30,824
Ill.	135,572	Va.	30,597
Ind.	97,391	W. Va.	29,750
Ky.	70,040	Md.	27,081
Mo.	69,042	Maine	26,093
La.	59,102		

*Jan. 1, 1950, taken from USDA Dairy Herd Improvement Association Newsletter, March, 1950.

It is significant that there are more than 1,300 cows enrolled for each bull. This means that really good bulls can be used on many more cows than would otherwise be possible. This, in addition to the fact that it can be done economically (\$5-7 per cow), is the chief advantage of AI.

THE ESTROUS CYCLE OF DAIRY CATTLE

Heifers generally start coming in heat at 4 to 8 months of age³³ depending on breed and rate of development. In heifers, heat periods normally recur every eighteen to twenty-two days, with an average of twenty days. In cows, heat normally occurs at eighteen- to 24-day intervals with an average of twenty-one days.¹ According to Trimberger,⁴⁶ the average duration of estrus is fifteen and three-tenths hours in heifers and seventeen and four-fifths hours in cows, with a normal range of two and one-half to twenty-eight hours. He also gives the time of ovulation, for both cows and heifers, as ten and one-half hours after the end of estrus, with a range of three to eighteen hours.

Breeding efficiency at various stages of estrus was determined for 295 cows by Trimberger and Davis.⁴⁴ Their results are shown in table 3.

On the basis of this information, it may be seen that the highest efficiency was obtained when cows were bred six to twelve

TABLE 3—Breeding Efficiency at Various Stages of Estrus

Time of service	Cows bred (No.)	Conceived (No.)	(%)
Start of estrus	25	11	44.0
Middle of estrus	40	33	82.5
End of estrus	40	30	75.0
6 hr. after estrus ended	40	25	62.5
12 hr. after estrus ended	25	8	32.0
18 hr. after estrus ended	25	7	28.0
24 hr. after estrus ended	25	3	12.0
36 hr. after estrus ended	25	2	8.0
48 hr. after estrus ended	25	0	0.0

Trimberger and Davis.¹¹

hours after the beginning of heat. However, satisfactory results were obtained when cows were bred within twenty-four hours of the beginning of heat or within six hours of the end of heat.

Van Demark and Moeller¹⁰ found spermatozoa in the upper third of the oviduct as soon as two and one-half to eleven minutes after insemination. Some of the cows were inseminated with dead sperm and the rate of transport was apparently just as fast. Therefore, uterine motility would appear to play an important part in the transport of spermatozoa to the ovarian end of the oviduct.

BREEDING EFFICIENCY IN PRACTICE

Most associations now figure their conception rates on the basis of "sixty to ninety day nonreturns." This means that sixty days after the end of the month in question, the returns from first service are tabulated and subtracted from the number of cows bred; this gives the number of nonreturns from which the percentage of apparent conception can be calculated, i.e.

$$\frac{\text{Nonreturns}}{\text{cows bred}} \times 100 = \text{percentage nonreturns.}$$

Most AI associations have about 65 per cent nonreturn from first service. Usually, three services are given, if required, at no extra cost. About 85 to 90 per cent of the cows have conceived at the end of three services.

It is rather surprising to some that only about half of the repeats come back for second service at the expected eighteen- to 24-day intervals. Records from the Kentucky Artificial Breeding Association²⁷ show that of 5,304 repeats, 4.8 per cent

came back in less than seventeen days, 49.6 per cent in eighteen to twenty-four days, 11.4 per cent in twenty-five to thirty-six days, 16.3 per cent in thirty-seven to forty-seven days (6 wk.), and 17.8 per cent in forty-eight days or more. Of 944 cows which came back in forty-eight days or over, 75.4 per cent returned in two months, 13.8 per cent in three months, 5 per cent in four months, and 6.8 per cent in five months or more.

Barrett *et al.*⁸ found that the percentage of sixty to ninety day nonreturns was about 5.5 per cent higher than the actual conception rate. Casida *et al.*¹² found that at least 4 per cent of the pregnancies were lost before the end of four months. In a study of 104 repeat breeding cows, Tanabe and Casida¹³ found a 65.1 per cent embryonic death rate within the first thirty-four days of the gestation period.

SEmen COLLECTION

Semen is collected by means of an artificial vagina (temp. 105-110 F.) about once a week for most bulls. The average ejaculate is 4 to 5 ml. and contains 300 million to 2 billion spermatozoa per milliliter.²⁸ An egg yolk-sodium citrate diluter (some prefer the term "extender") is probably the one most commonly used; it is prepared by adding 2.9 Gm. of sodium citrate ($\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$) to 100 ml. of distilled water;²⁴ this is autoclaved and mixed with an equal quantity of fresh egg yolk. The fresh semen is diluted from 1:4 to 1:100 depending on quantity needed and also on the quality of the semen. This diluted semen is then cooled slowly to 40 F. (taking 2-3 hours).

Most associations ship fresh semen at least three times a week and many of them now ship every day. Schultze *et al.*²⁷ have reported that fertility declines about 4.6 percentage units with each day of storage up to four days.

Willett²⁹ has shown that when semen from bulls of high fertility is diluted to contain less than 12 million, but more than 6 million, spermatozoa per milliliter (i.e., dilutions between 1:100 and 1:200), there is a decline in fertility of about 0.5 per cent for each million decrease in concentration of sperm. However, when diluted to contain less than 6 million per milliliter, there is a decline in fertility of

2.6 per cent for each million decrease in concentration. Salisbury and Bratton²⁵ have recommended a minimum of 5 to 10 million spermatozoa per insemination. This number may be required for the production of sufficient hyaluronidase to permit fertilization. After ovulation, the ovum is surrounded by the corona radiata or cumulus cells embedded in a gel-like substance. Removal or dispersal of this structure is necessary to enable the spermatozoa to penetrate the egg. Pincus and Enzmann²⁶ suggested that the dispersal is brought about by a heat-labile enzyme produced by the sperm. McClean and Rowlands²⁷ have shown that an enzyme, hyaluronidase, is associated with sperm and that it causes liquefaction of the gel substance of the corona radiata. Johnston *et al.*²¹ assayed 100 semen samples from 22 bulls for hyaluronidase within one hour after ejaculation and again after twenty-four hours' incubation at 37 C. They found a high correlation between the amount of enzyme and the concentration of spermatozoa and the percentage of live sperm.

Swanson²⁸ has varied the proportion of egg yolk and sodium citrate solution from 1:1 to 1:3 and 1:7. He found very little difference in the percentage of motile sperm when stored, and in the resistance of spermatozoa to cold shock. Fertility reports have not been made as yet; however, some bull studs are decreasing the amount of egg yolk used.

Dunn and Bratton¹⁵ have reported the use of buffered whole eggs for diluting semen. They removed the chalazae with sterile forceps and beat the eggs for two minutes in a Waring blender. The diluter was made up of 1.93 per cent sodium citrate and 0.4 per cent sulfasuxidine; 3 parts of this was mixed with 1 part of eggs. Fertility compared very well with the usual citrate, sulfanilamide, and egg yolk diluter.

Following a report by Almquist,² many bull studs are now using coal-tar dyes for coloring semen of the various breeds. Colors used are red for Jersey, green for Holstein-Friesian, brown for Brown Swiss, purple for Ayrshire, and natural yellow of the egg yolk for Guernsey. It takes about 1 drop of dye per 25 ml. to give adequate color. There is no detectable effect on fertility.

Van Demark *et al.*⁴⁷ have shown that

increased aeration and higher oxygen tensions of semen speed up the production of hydrogen peroxide by spermatozoa and thus decrease motility and livability of the spermatozoa. They recommend a minimum of air space in semen vials as well as a minimum of mixing or agitation.

SEmen EVALUATION

There are still conflicting reports concerning the value of the various tests for semen quality. Ejaculates having a large volume and a heavy concentration of live sperm are, of course, desirable. Lasley and Bogart²² have reported that semen containing less than 50 per cent live spermatozoa is of questionable fertilizing ability, whereas semen containing 50 to 90 per cent live spermatozoa shows no uniform difference in fertilizing capacity. They also used an opal blue and water-soluble eosin stain for differentiating dead from live spermatozoa (live sperm remain unstained, whereas dead sperm are stained). The percentage of live spermatozoa in diluted semen following a 0 C. cold shock for ten minutes showed a highly significant correlation with fertility. Shaffer and Almquist^{28,29} used aniline blue and eosin as a differential stain and found a highly significant curvilinear regression between fertility and the percentage of unstained spermatozoa, i.e., poor samples were rather accurately detected but differences of degree were not apparent in good samples.

Margolin *et al.*²⁴ and Swanson and Herman²² have shown that longevity or viability of spermatozoa under storage conditions was positively correlated with fertility. Beck and Salisbury¹⁰ have shown that the decrease in motility of spermatozoa in semen samples diluted with yolk-citrate and stored for ten days at 5 C. was positively correlated with decrease in motility for similar samples stored in water baths for periods of one-half to one hour at a temperature of 46.5 C. to 47.5 C. Ludwick *et al.*²³ found a highly significant correlation between livability of spermatozoa incubated at 100 F. and fertility. Most good samples retained live spermatozoa for eighteen to twenty-four hours.

In general, no correlation has been found between pH, concentration of spermatozoa, volume, percentage of abnormal spermatozoa, or initial motility and fertility of semen.⁴¹

BACTERIOLOGY OF SEMEN

Almquist *et al.*⁵ found an average of 200,000 bacteria per milliliter of semen in 202 ejaculates of 36 bulls. There was no significant relationship between fertility and the number of bacteria present in the undiluted semen. Bush *et al.*¹¹ reported a significant relationship between the number of bacteria in diluted semen and its fertility. Edmondson *et al.*¹⁶ found that hemolytic bacteria decreased the time semen could be stored, whereas certain nonhemolytic organisms increased the storage time as much as one to four days over the controls.

Prince *et al.*³¹ found that gram-positive rods, especially diphtheroids, were predominant in the flora of semen, while gram-positive micrococci were next in frequency. No streptococci were found in 212 ejaculates of 36 bulls. They found *Pseudomonas aeruginosa* in 39 per cent of 165 ejaculates from 30 bulls and coliform organisms in 11 per cent of 209 ejaculates from 35 bulls.

Salisbury and Knott³³ found that the addition of sulfanilamide to the yolk-citrate diluent at the rate of 300 mg./100 ml. increased fertility by about 5 per cent. Almquist^{4,6} has shown that the addition of penicillin, streptomycin, or a combination of the two increased the fertility of relatively infertile bulls by about 20 to 25 per cent, whereas sulfanilamide failed to show this increase. Many bull studs are now routinely adding 500 to 1,000 units each of penicillin and of streptomycin per milliliter of diluter. However, Almquist *et al.*² have shown that penicillin does not affect, appreciably, the fertility of semen from high fertility bulls.

INSEMINATION TECHNIQUE

The speculum method of artificially inseminating cows has largely passed out of use. Most inseminators grasp the cervix through the rectal wall and pass the inseminating tube into the vagina, through the cervix, and into the uterus. Semen is deposited either deep in the cervix or in both the uterus and cervix. Holt²⁰ reported a conception rate of 33.4 per cent for 377 cows bred by intracervical deposition of semen, whereas 56.1 per cent conceived by intrauterine deposits. Salisbury and Van Demark³⁰ found, in a study involving 936 cows, that cervical deposition was as satis-

factory as deposition either into the body or the horns of the uterus. Further investigation involving several thousand cows, though inconclusive as yet, appears to confirm these results.

FACTORS AFFECTING FERTILITY IN DAIRY CATTLE

Van Demark and Salisbury⁴⁶ in a study of 1,674 pregnancies in 593 cows, found that fertility increased with length of the postpartum interval up to 100 to 120 days. In cows bred less than twenty days after calving, only 35 per cent of the services resulted in conception, while nearly 58 per cent of the services were effective in those cows bred 100 to 120 days after calving. There was a slight decline in fertility in cows first bred more than 200 days after calving.

Heifers generally have a slightly lower breeding efficiency than cows.²⁷ Trimberger and Davis⁴⁵ found that the number of services required by 133 virgin heifers had no value in predicting the number required for subsequent conceptions. The effect of age and size on breeding efficiency of heifers is not fully understood. Olds *et al.*²⁶ found that, aside from a satisfactory conception rate in 12- to 14-month-old Jerseys, the conception improved as the animals grew older, up to 21 to 24 months of age. Hansel¹⁸ has found that the degree of development of the arterial system of the uterus is dependent on ovarian hormones and, therefore, would be associated with the number of estrous cycles the animal has had.

The role of nutrition in fertility has been well reviewed by Reid.³² The role of infectious diseases has been reviewed by Bartlett,⁹ and the role of heredity by Gilmore.¹⁷ The use of hormones in the treatment of sterility has been reviewed by Asdell.⁷

A report by Dunbar and Henderson¹⁴ indicates that the heritability of fertility in dairy cattle is near zero. This is in agreement with reports made by Trimberger and Davis⁴⁵ and Olds *et al.*²⁹ Olds and Seath,²⁸ in a study involving 6,509 cows, found that the breeding efficiency of cows can not be accurately predicted on the basis of previous performance. Of the cows requiring 2 to 4 services for conception the previous year, more than 55 per cent conceived at first service the following year. This indi-

cates that much of the infertility is temporary and largely influenced by environmental factors rather than genetic factors. Of 172 "problem herds" (herds averaging 2.1 or more services per cow) only 9.3 per cent were still problem herds the next year.

CONCLUSION

The vast number of breeding records made available through artificial insemination is drawing to our attention many problems which could and should be studied more thoroughly with basic research. It is hoped the veterinary profession will take an active part in this work and maintain the respect of animal production men.

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Broken Legs of Horses and Cows

Science Digest (March, 1951) says that broken legs in horses and cows may sometimes be repaired by a new technique adapted by J. W. Kendrick, D.V.M., (CORN '47) at the Veterinary Science Clinic, University of California College of Veterinary Medicine. Several instances of successful use are reported.

In many cases, barrenness may be an indication that the mare is not quite up to the job of bearing and rearing a foal every year.—*Blood-Horse*, March 25, 1950.

Infertility in Mares

A fertility rate of 50 per cent at the first postparturition heat can not be expected in a large group of mares, says L. W. Mahaffey (*Austral. Vet. J.*, Nov., 1950). Appropriate selection of mares following ovarian palpation and examination of the genital tract should result in 70 per cent of those served conceiving, but when a rigid schedule of mating on a particular day after foaling is adhered to, the results will be poorer. The foal heat may be used in Thoroughbred studs where time is urgent.

Colostrum for Kids

Mainly because the udders of does become greatly congested for several days before parturition, the practice of milking does before kidding is becoming more general among breeders. The milk of does contains colostrum for about a week. This means that kids will receive no colostrum if it is necessary to milk the doe for more than a week prior to kidding. Freezing of the products of this premilking, which contains the colostrum, seems to be the answer.—*North Am. Vet.*, 32, (April, 1951): 266.

Diluted Bull Semen

Decrease in spermatozoan numbers was more important in causing the decrease in nonreturn rates with the dilution levels studied in this experiment than the direct depression of motility by high dilutions.—*J. Dai. Sci.*, Jan., 1950.

Antibiotic Drugs in Artificial Insemination.—The use of antibiotic drugs (streptomycin, penicillin, and aureomycin in combination) in the semen will often effect a 5 per cent increase in the conception rate of bulls of relatively high fertility. The increase may be as much as 30 per cent where bulls are of low fertility.—*Ayrshire Digest*, March, 1951.

Coagulation of Blood.—The coagulation of blood is one of the most intriguing physiologic processes in the field of biology and chemistry. This problem and the relation of vitamins D, E, and K to it and to the general problem of nutrition are discussed by Henry T. Scott (*Feedstuffs*, Oct. 21, 1950: 19).

CLINICAL DATA

Clinical Notes

Feeding of moldy sweet potatoes has caused cattle deaths in the South, according to *The Auburn Veterinarian* (Winter, 1951).

A Ceylon practitioner (*Brit. Vet. J.*, March, 1951) says he has obtained good results with intramuscular and oral riboflavin as an antidote for DDT poisoning in dogs.

It is disturbing to see the large number of *Salmonella typhimurium* strains isolated from "ready to cook" poultry marketed without veterinary medical inspection. Plant sanitation, still lagging behind legal requirements, may contribute to this phenomenon.—*Iowa State College Vet.*, No. 2, 1951.

Management of Tetanus.—Two human cases of severe tetanus were adequately controlled by oral administration of mephenesin, together with pentobarbital sodium in moderate doses to facilitate relaxation. Satisfactory control of muscular spasms without excessive sedation is considered preferable to the use of large quantities of barbiturates or curare.—*What's New (Abbott)*, March, 1951.

Buccal Warts in Dogs

Persistent buccal warts in dogs are always difficult to treat. Therefore, a report by Hamilton Kirk (*Vet. Rec.*, Jan. 6, 1951) is interesting because it reports submucous injection of podophyllin in oil following injection of the local anesthetic.

The author reports that every wart in the mouth was gone within thirty-six hours and the animal began to eat and pick up in condition, but the injection set up an inflammatory reaction which caused a considerable sloughing of the tissues. He suggests a greatly diluted oil or a smaller injection as a possible answer to the problem.

Tubercle bacilli remained viable for eleven days in soft cheese, three weeks in butter, and three to twenty-eight weeks in hard cheese.—*Refuah Vet.*, Oct., 1950.

Hog cholera serum is produced in 35 of the 65 plants currently manufacturing biological products under U.S. BAI supervision.

Studies in human patients undergoing intestinal surgery showed that terramycin is as effective as aureomycin as an antibacterial agent on intestinal flora.—*Proc. Staff Meet., Mayo Clinic*, Jan. 31, 1951.

Some horseshoers are so afraid a horse will throw a shoe that they clinch the nails too tight. This can cause excessive pressure on the sole and produce corns and laminitis.—*D. L. Proctor, Jr., D.V.M., Blood-Horse*, April, 1951.

Neostigmine methylsulfate relieves the symptoms of hypersensitivity which are characterized by dizziness, apprehensiveness, trembling, and palpitation (*Cur. Med. Dig.*, July, 1950). When administered subcutaneously or intravenously, the results are dramatic and may be evident within a few seconds.

Phosphorus deficiency in growing shoats can be confused with swine erysipelas because affected pigs do not use the hind legs. They appear to be sore over the loin as if suffering from lumbago. It occurs most often in pigs being fed only corn and water.—*E. W. Peck, D.V.M., Nebraska*.

Persistent or Overactive Thymus Gland

The prominent symptoms of the persistence of the thymus gland are difficult breathing, cyanosis, tetanic-like spasms, and pain. All may originate suddenly and cause death quickly.—*Vet. Med.*, Oct., 1950.

Congestive Heart Failure in Dogs

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AN INCREASINGLY large number of dogs with congestive heart failure are being brought to us for treatment. We invariably tell the owner that his dog with heart disease can not be cured. The best we can hope to do is to give the animal some degree of symptomatic relief and possibly prolong its life. In spite of this poor prognosis, sentiment usually prompts the owner to insist that his pet be treated. Thus, we again and again enter the not-too-well-explored field of canine cardiology.

The veterinarian's interest in cardiac disease and its treatment, although of relatively recent origin, is on the increase. Detweiler¹, and Bourne² recently reported the anatomic and physiologic similarities of heart diseases in animals and human beings. It is evident that the dog also suffers from poor cardiac function due to valvular abnormalities, myocardial weakness, bacterial factors, dysfunction of the nervous mechanism which regulates the rate and rhythm of the heart beat, and kidney and liver complications. And in the dog, as in man, cardiac abnormalities often cause cardiac insufficiency, congestive heart failure, and eventual cardiac death.

As far as I know, no veterinarian is a counterpart of the cardiologist of human medical practice. The veterinarian deals with heart cases on the basis of his personal knowledge of the pathology, abnormal physiology, diagnosis, and treatment of cardiac diseases. Experience has taught him that most dogs with heart failure are old, and valvular insufficiency is often the fundamental cause of the condition, although with the diagnostic aids used by the veterinarian it is difficult or impossible to determine which valve is at fault. Furthermore, recognition of the basic cause of failure of the heart is made more difficult by the fact that myocarditis and endocarditis produce symptoms so similar to those of valvular insufficiency that a differential diagnosis is seldom possible, except at autopsy. And although the role of cardiac arrhythmia in canine heart dis-

ease is not clearly understood, it is well known that chronic nephritis or nephrosis often is a complicating factor. On the other hand, heart failure in old dogs may be entirely functional, the heart muscle having become worn out by the tremendous amount of work it has performed over the years. (The heart muscle of a 12-year-old Boston Terrier, for example, will have contracted some 700 million times.)

Congestive heart failure usually is typified by ascites, edema, difficult breathing, and cough due to pulmonary congestion (so-called cardiac asthma), cardiac dilatation and hypertrophy, systolic bruit, increased diastolic sound on auscultation, engorgement of the veins, and possible weakness of the pulse and irregularities of the heart beat. The mucous membranes are cyanotic in the badly decompensated patient.

After cardiac failure has been diagnosed, the veterinarian must (1) make certain the client realizes that his dog can not be cured (rather, it will get progressively worse and die at some unpredictable future time); (2) make the dog as symptom-free as possible.

For our immediate purpose, we should bear in mind that congestive heart failure is a vicious medical cycle. First, reduced cardiac output results when the heart loses its efficiency as a pump and so delivers less than the normal volume of blood to the arterial system each time it beats. Then, circulatory insufficiency develops in the arterial system as cardiac output falls off. Next, venous congestion develops when the propulsive effect of the arterial circulation on the venous blood flow is reduced, and this venous stasis is responsible for decreased return of venous blood to the heart. This results in inadequate auricular filling and further reduction in cardiac output. Ascites and edema occur as cardiac output and circulatory inadequacy develop, and these become more pronounced should the kidneys fail because of decreased renal circulation or kidney disease.

From the Berliner Animal Hospital, Washington, D.C.

Completion of this first cycle of reduced cardiac output, circulatory insufficiency, venous congestion, decreased venous return, inadequate auricular filling, and development of ascites and edema starts another cycle composed of the same elements, which brings on a more severe state of congestive heart failure. The ultimate end-result of all this is failure of the body tissues to receive the optimum amount of oxygen and nutrient materials required to carry on their normal functions at an adequate level. From a physiologic standpoint, the basic expression of cardiac failure is tissue anoxia.

A therapeutic regime for congestive heart failure must be "physiologic therapy," which Barach³ defines as measures intended "to maintain normal activity in an organ (or other body tissue) whose function has been deranged by disease or adverse environmental influences." Each component of the physiologic therapy must be justified either on the basis of its ability to decrease the need of the body cells for oxygen or on its ability to increase oxygen delivery to the cells.

A PHYSIOLOGIC REGIME

Possibly the best physiologic regime consists of the following:

A Sedative.—This agent, by quieting the animal both nervously and physically, reduces the body's need for blood and oxygen. Thus, the dog's circulatory need is brought more into conformity with the ability of its inefficient heart to maintain adequate circulatory volume.

A Restricted Diet.—This should be rich in protein and just adequate to the body's caloric need. Such a diet not only lessens the circulatory demand of digestion but also helps prevent formation of ascites and edema.

Reduced Salt Intake.—Sodium chloride favors formation and retention of ascites as well as tissue and pulmonary edema. According to Stubbs⁴: "In congestive heart failure there seems to be an inability of the kidneys to excrete sodium in their usual fashion. Decreased renal function and anoxia aid sodium storage in the intracellular fluids. This soon creates a vicious cycle which encourages edema formation. The salt-free diet which has either an acid-

ash or a neutral residue may be used and frequently is attended by good results."

A Cardiac Drug.—This drug must increase the mechanical efficiency of the damaged heart as a pump, invigorate the sluggish circulation, increase the blood supply to all body tissues and organs, including the heart muscle and kidneys, help reduce ascites and edema, and ease labored breathing. Seventy years after Withering, digitalis continues to be the cardiac drug par excellence. Numerous and exhaustive pharmacologic and clinical studies have established that digitalis stimulates the vagus to slow the heart, increases the force of the heart beat, and lengthens the rest period between contractions. Following digitalization of the congestive heart failure patient, cardiac output improves, arterial and venous circulation increases in volume and vigor, and tissue anoxia decreases.

An Ascites- and Edema-Reducing Measure.—Ascites and edema are barriers to normal oxygen and nutrient exchange between lungs and blood and capillaries and body cells and must be removed. The problem of the clinician is to select the ascites- and edema-reducing measure which best qualifies as physiologic therapy and is least disturbing to the patient. These measures fall into two categories: (1) extra-renal means of promoting water loss and (2) renal means of promoting water loss (diuretic drugs). The extra-renal means are purgatives, usually salines. These salts act by osmosis to load the bowel with water. Theoretically, this fluid is drawn from the reservoirs of accumulated ascites and edema. Purgation is a poor substitute for diuresis. Abdominal paracentesis is a direct approach to elimination of ascites. However, tapping the abdomen is temporization and does not reduce tissue and pulmonary edema. Furthermore, there is always the possibility of paracentesis causing collapse of the animal, and even its death.

The best renal means of promoting water loss (diuretic drugs) is to increase the rate at which the kidneys secrete urine. This can be done by increasing the volume of the renal circulation, by increasing the rate of glomerular filtration, by decreasing reabsorption of the glomerular filtrate by the renal tubules and its return to the blood stream or, ideally, by a combination of the three.

DIURETIC DRUGS

There are three types of diuretic drugs, namely:

Acid-Forming Salts.—Such acid-forming salts as ammonium chloride increase urine output by decreasing tubular reabsorption. According to Goodman and Gilman,³ ammonium chloride raises the osmotic pressure of the glomerular filtrate and "inasmuch as there is a well-defined limit in the degree to which the renal tubules can concentrate electrolytes, the excretion [of the ammonium chloride] must be accompanied by appreciable amounts of water." They further state that these acid-forming salts "are likely to cause gastric distress, nausea and vomiting. Therefore, it is often a question whether their administration is warranted," and "in the presence of inadequate renal function, the administration of ammonium salts is contraindicated because of the danger of uncompensated acidosis."

Salts of Mercury.—According to Goodman and Gilman, salts of mercury "act by reducing tubular reabsorption of water.... The action of the organic mercurial diuretics on renal tubules represents a very early stage of the toxic action of mercury on the kidney." The organic mercurials are considered to be the most powerful of the diuretic drugs. However, they certainly are not innocuous substances, and in medical literature there has been an increasing number of reports warning against their toxic manifestations and their overuse. The toxic reactions to mercurials include: gastrointestinal and renal irritation; and weakness, somnolence, muscle cramps, confusion, restlessness, excitement, coma, and death. It should also be noted that mercurial diuretics can not be given orally, they do not increase the nutrient coronary blood flow to the heart muscle, they are not myocardial stimulants, and, being cumulative in action, they can be dangerous in aged patients.

Xanthine [Derivatives].—Caffeine, theophylline, and theobromine according to Goodman and Gilman, "have a pronounced diuretic action. This activity, coupled with the absence of toxic effects, has led to the wide use of these compounds as diuretic agents.... The xanthines have important actions on the circulatory system (as well as on the excretory mechanism of the kidney) of which therapeutic use is

made. . . . The direct myocardial action of the xanthines causes an increase in cardiac output. . . . Vasodilatation, coupled with increased cardiac output, results in increased blood flow. . . . The coronary vessels are also relaxed by the xanthines. This has been demonstrated experimentally both in intact unanesthetized animals and in anesthetized animals when an increase in coronary circulation sometimes as great as 100 per cent follows xanthine medication." Caffeine is not used as a diuretic. It is too weak in action and produces too much central nervous stimulation and excitation. Theophylline and theobromine are the most potent xanthine diuretics. Their only disadvantage is their liability to cause gastric irritation and nausea. Therefore, oral tablets of basic theophylline or theobromine, as well as the soluble salts of these xanthine substances, are enteric coated. The calcium salt of theobromine (theocalcinc® Bilhuber-Knoll Corp.) which is virtually insoluble in the gastric medium and so is not likely to irritate the gastric mucosa and cause nausea, does not require an enteric coating. This is a distinct advantage, as theocalcinc can be given in fully adequate therapeutic doses and continued indefinitely. Furthermore, it has a better diuretic action because it need not be enteric coated.

The drugs in my therapeutic regime for dogs with congestive heart failure are: sedative, phenobarbital; digitalis, U.S.P. tablet, 1½ gr., scored; mercurial diuretic, salyrgan; xanthine diuretic, theocalcinc.

I seldom use the mercurial diuretic. Oral theocalcinc therapy is started at once, and the diuretic effect is soon established. When, as is often the case, I am able to start treatment before ascites and edema have become massive, I find it unnecessary to use a mercurial diuretic. Theocalcinc alone will establish and maintain fully adequate increased augmented urine output when given orally in a dose of one or two tablets two or three times daily, the dose being reduced to a minimum maintenance level as symptoms improve.

There are quite a few xanthine diuretics to choose from, but I have found theocalcinc to be the best for all around use in small animal practice. It is a potent oral diuretic. It is easily administered, and this is important because the client will do most of

the giving of medication to these cardiac patients. It is well tolerated by the stomach, and fully adequate therapeutic doses can be given continuously for long periods. Theocalcine is theobromine calcium salicylate, so you are not giving sodium, which tends to increase ascites and edema, when you give this diuretic. And the coronary dilatation, myocardial stimulation, and increased cardiac output it produces complement and augment the action of digitalis on the heart.

CASE REPORTS

The following case histories demonstrate the practical application of physiologic therapy for congestive heart failure.

Case 1.—A male German Shepherd, 13 years old, had a history of dropy, labored breathing, cardiac cough, and collapse. The diagnosis was congestive heart failure. The therapy instituted was 1½ gr. of phenobarbital twice daily; theocalcine (1 tablet, 7½ gr.) four times daily; digitalis, 1½ gr. twice daily for one week, and then 1½ gr. daily, watching for nausea or other symptoms of over-digitalization.

Collapsing spells disappeared. The dog died of nephritis six months later. (Larger animals usually offer a poorer prognosis than do smaller animals and expire more quickly.)

Case 2.—A male Smooth-Haired Fox Terrier, 9 years old, had a history of attacks of dyspnea with actions indicative of severe distress. The diagnosis was coronary insufficiency.

Phenobarbital, 1½ gr. daily, was administered for two weeks; theocalcine, 7½ gr. orally, was given three times a day; and digitalis, ¾ gr., was given twice daily for one week, and ½ gr. daily for about one month. The digitalis was then discontinued and the patient maintained on theocalcine alone.

There were no further attacks while under the influence of theocalcine. Attacks resumed when theocalcine therapy was discontinued and were again abolished when the patient was put back on this drug. The dog lived for four years after treatment was begun.

SUMMARY

The anatomic, pathologic, etiologic, and abnormal physiologic aspects of congestive

heart failure in dogs do not fundamentally differ from those of human cardiac patients. As the heart fails, because of either organic or functional derangement of the cardiovascular-renal mechanism, cardiac decompensation develops and sets up a vicious cycle of reduced cardiac output, decreased circulatory rate and volume, renal insufficiency, ascites, and tissue and pulmonary edema, and tissue anoxia. Therapy for congestive heart failure, therefore, must have as its ultimate objective either reduction of the body's need for oxygen or increased oxygen delivery to body cells or, preferably, both. The therapeutic regime which best accomplishes these objectives is composed of phenobarbital, which by its sedative action reduces the body's metabolic rate and oxygen need; digitalis, which increases the mechanical efficiency of the heart as a pump, thereby improving the general circulation and oxygen delivery; and theocalcine, a diuretic which reduces ascites and edema, thus removing these aqueous barriers to oxygen exchange between lungs and blood and blood and body cells. Theocalcine is the xanthine diuretic of choice, because it materially increases urine output and provides desirable myocardial stimulation, it is fully effective orally, and it is so well tolerated by the stomach that it can usually be given day after day indefinitely.

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Bowel Edema in Pigs.—This condition has taken a heavy toll of pigs in Ireland during the last few years, particularly of pigs 6 to 8 weeks old. It is believed to be due either to an iron deficiency or a disturbance of iron metabolism, according to P. N. Power (*Irish Vet. J.*, Nov., 1950).

Clostridium Infections in India. II

ARLAN W. McCURKIN, D.V.M.

Allahabad, India

Following my experience with Clostridium infections in September, 1948,¹ no attempt was made to identify the organisms involved. All cattle and buffaloes were kept immune to blackquarter thereafter by inoculating them with 5 ml. of blackquarter antibacterin at about 4 months of age. Consequently, I was surprised when a case of Clostridium infection occurred in July, 1949, in a vaccinated animal.

The animal, a Jersey bull recently imported from the United States, arrived with 3 other animals and was vaccinated for blackquarter and anthrax soon thereafter. He remained in good health until the time of death when he was just 2 years old.

History.—At 2 a.m. on July 19, 1949, the bull was seen alive and apparently normal. At 5 a.m., he was found dead. At 7 a.m., when I began an examination, a small amount of bloody froth was oozing from the right nostril and the right eye. No other abnormalities could be found except that the carcass was moderately bloated. A blood sample taken from the jugular vein did not reveal anthrax bacilli when examined microscopically. The blood was dark and did not clot in the forty-eight hours that it was kept in the laboratory.

The carcass was not removed from the place of death until about 11 a.m. At that time, a slight swelling of the throat region and adjacent muscles was noted.

Lesions.—The muscles of the throat region were pink with a small amount of fluid and some gas present. The odor was distinctly that of butyric acid. The submaxillary and prescapular lymph glands were enlarged and hemorrhagic. There were epicardial hemorrhages on the heart, and the heart muscle was pinkish and flaccid. The lungs were congested and bluish green, and the slightly swollen liver was also bluish green. The spleen was swollen, but the capsule was intact and firm. The interstitial tissue was mushy and gas was present. The viscera showed peritonitis,

but no gastritis or enteritis. The kidneys were apparently normal. Probably the discoloration of the lungs and liver was due entirely to postmortem changes. The color of the affected muscles of the throat region was not that expected following typical blackquarter infections.

Laboratory examination of the affected muscles showed a gram-positive rod with subterminal spores, and a few organisms with the spores in a more central location. Animal inoculations from the muscle tissue demonstrated that rabbits were resistant to the organism and that guinea pigs died in about fifteen hours.

DISCUSSION

No further attempt to identify the organism was made at that time but, since the bull had died after he had been vaccinated with the available blackquarter vaccine, I felt that the vaccine did not meet our particular needs.

An attempt was made to produce a formalin-killed broth bacterin. The dead guinea pig muscle tissue was inoculated into the following medium:

Commercial bouillon cubes	5 Gm.
Calcium gluconate	5 Gm.
Dextrose	50 Gm.
Sucrose	50 Gm.
Defibrinated ox blood	100 ml.
Distilled water q.s.	1,000 ml.

The flask was sealed with mineral oil and incubated for six days. Growth was good and a moderate amount of gas was produced. As incubation progressed, the medium gradually cleared and a large amount of flocculent precipitate formed. The culture was formalized at the rate of 1 per cent and incubated for five days more. It was then checked for sterility by guinea pig inoculations, filtered through sterile cotton, and its potency checked by inoculation into 4, 3-month-old calves. A 5-ml. dose of the bacterin was used in the test calves. Fifteen days later, 1 calf was given an intramuscular inoculation of 1 ml. of a suspension of infective guinea pig muscle tissue. The calf developed lameness, a swollen thigh, and a temperature of 103 F., but recovered. The other 3 calves were given booster doses of 5 ml. each and then inoculated with 1 ml. of a similar suspension as that used on the first calf ten days later. After two days, all 3 calves showed a temperature reaction

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Dr. McClurkin returned to his home in Clay Center, Kan., early in May, 1951.

¹McClurkin, Arlan W.: Clostridium Infections in India. J.A.V.M.A., 116, (1950): 46-49.

up to 104 F., developed slight lameness in the inoculated quarter, and then recovered. Hereafter, this material was used for blackquarter bacterin for the calves.

During August, 1949, the usual sudden deaths in goats and sheep began to occur. I had observed this type of disease during my first winter here and also during the parts of the monsoon and postmonsoon seasons that I have been here at the Institute, and following the floods of September, 1948. For some time, the Institute had been troubled by death losses in sheep and goats that usually about equaled the births in any one year. The disease seemed to be characterized by sudden death with few or no lesions. If anything could be found, it was usually a slightly swollen, icteric liver. Smears of liver tissue indicated that a Clostridium was involved.

Some tissue that had been saved from a goat that died in September, 1948, was inoculated into a guinea pig. The affected guinea pig muscles were then inoculated into a medium identical to that described for use with the organism from the Jersey bull, and handled in the same way. After checking the bacterin for sterility by guinea pig inoculation, all the goats, sheep, kids, and lambs were given a 5-ml. dose of the bacterin. One 4-month-old lamb was selected to check the potency of the bacterin. The lamb was given 1 ml. of emulsified virulent guinea pig muscle tissue. The lamb lived and showed no symptoms.

The results from the use of this bacterin on the sheep and goats have been particularly successful and no losses from Clostridium infections have resulted in the year that it has been used. This is a remarkable change from our previous experience. No loss has occurred in calves or cattle since the use of the bacterin made from the Jersey bull tissue but, with the exception of the year of the flood and the death of the Jersey bull, we have had very little loss from clostridial infections in young stock, even before the use of the autogenous bacterin. There is, however, a considerable difference in our management of calves and cattle as compared with that of our sheep and goats. All cattle are fed entirely in the feedlot and never allowed to graze. The sheep and goats are expected to get most of their daily feed through grazing along the edges of the fields and roadsides.

In December, 1950, six sugars were used in an attempt to identify the organisms involved. In inoculating the carbohydrate mediums, recently dead guinea pig muscle tissue and/or heart blood was used.

When heart blood from inoculated guinea pigs was used as a source of inoculum for the carbohydrate mediums, acid and gas were produced in dextrose, lactose, sucrose, and maltose, but mannitol was unchanged. The reaction in saccharose was somewhat more variable, but usually acid with a very small amount of gas was pro-

duced. On two trials of bacteria of goat origin, saccharose was unchanged. On one trial in saccharose medium, of bacteria from the Jersey bull, very little change took place; while on two other trials, a very small amount of gas was produced. Otherwise, the reactions were identical for the Clostridium of goat origin and that of Jersey bull origin. This would seem to indicate that *Clostridium chauvei* was involved in the disease of both the sheep and goats and the Jersey bull.

However, when inoculated guinea pig muscle was used as a source of inoculum for the carbohydrate mediums, a different reaction was observed, in that the organisms from either origin consistently produced acid and gas in all carbohydrate mediums. In so far as these limited observations go, it is difficult to say whether a second organism was present in the muscle tissue that was also pathogenic, or perhaps the second organism was nonpathogenic but commonly found in dead tissue and was saprophytic. The peculiar symptoms of the animals involved would seem to indicate that some organism other than *C. chauvei* was also present.

The characteristic lesions of the guinea pigs that died following inoculations from either the goat or the bull source were a gelatinous reddish edema in the subcutaneous tissue of the abdomen, but no gas was formed, and the inoculated muscles were usually reddish. Rabbits were always completely resistant to the bacteria from either the bull or the goat origin.

CONCLUSIONS

It is interesting to observe that although *C. chauvei* was involved and was probably the chief cause of the disease, the symptoms commonly expected in blackquarter were absent in the animals that died during the flood, the sheep and goats that died before and after the flood, and in the Jersey bull. It is possible that the organisms here produce a rather potent toxin. Because goats and sheep are generally thought to be resistant to blackquarter, and because no swollen quarters or muscles were found on necropsy, the possibility of blackquarter as the chief cause of death had never occurred to me.

Parathion in Milk.—Parathion was not found in milk from cows fed this product in approximately 250 separate analyses. No objectionable flavor was noted in the milk and no harmful effects on the health of the cows have been observed. Parathion is 0,0-diethyl, 0,p-nitrophenyl thiophosphate, an insecticide which is being used widely in recent months.—*Science, Sept. 1, 1950.*

Contagious Pleuropneumonia

Contagious pleuropneumonia in cattle can be controlled by applying the complement-fixation blood test to animals and by vaccination, when these are accompanied by immediate destruction of clinically affected animals and reactors, and by close surveillance. The blood test must be repeated at intervals of five months.—*A. R. Grayson, Austral. Vet. J., July, 1950.*

Brucella M Vaccine for Wisconsin

The Wisconsin legislature has appropriated \$100,000 to back the manufacture and distribution of Brucella M vaccine in that state. Unable to get the product for other than research use because of interstate licensing laws, Wisconsin will attempt to get around this legislative blockade by setting up its own manufacturing facilities within the state.

According to *Hoard's Dairyman* (April 25, 1951), Drs. B. T. Simms and I. F. Huddleson testified before a joint committee of the state assembly and senate in Madison before the move was made. Dr. Huddleson, who developed the vaccine, said it "is not as good nor as bad" as some reports have claimed. He added that there is no evidence of reversion of M vaccine to its virulent form, it has never been found in the milk of vaccinated cows, and there is no evidence that human exposure to the vaccine causes any permanent reaction.

BAI Chief Simms testified that no request has yet been made for an interstate license for this vaccine. However, even if such a request were made, he would not approve it "on the basis of limited information available at this time." He cited three shortcomings of the vaccine: It does not produce strong resistance, vaccinated animals react to the blood test, and the vaccine is slightly pathogenic.

Commenting editorially, *Hoard's Dairyman* said: "There have been many reports passed around that there are personal differences between Dr. Huddleson and Dr. Simms, and that personalities were playing a part in the licensing of M vaccine on the part of the U.S. Department of Agriculture. Such reports are not justified and are definitely unwarranted. Both Dr. Huddleson and Dr. Simms are outstanding men and too large in professional stature to be

parties to such a condition. They hold each other in very high respect. They are on the same team, working toward the same goal—the control and eradication of brucellosis."

Antigenicity of Avian Pneumoencephalitis Vaccine

Current literature on the evaluation of avian pneumoencephalitis (Newcastle disease) vaccines of both live and killed varieties is extensive.

Broiler producers desire protection as soon as possible after hatching; the birds are marketed in a short time so that "life-long" resistance includes but a limited period. Safety and avoidance of contamination of premises are of primary importance. Since live virus (web method) and intranasal vaccine in day-old chicks may cause respiratory symptoms which interfere with maximum weight gains, an attempt was made to determine the protective value of the administration of killed virus vaccine (alumina gel adsorbed).

Conditions were simulated as closely as possible to those under which birds intended for the broiler market are raised, in order to determine the value of vaccination of day-old chicks with Newcastle disease vaccine (killed virus).

The immunity response of day-old chicks to intramuscular injection with Newcastle disease vaccine (killed virus, alumina gel adsorbed) is unaffected by parent stock history. The vaccine caused no unfavorable reactions.

Day-old turkey poult react to vaccination similarly to chicks.

The immunity response in chicks vaccinated at 1-day old begins to rise between the tenth and fifteenth days following injection and rises by the twentieth day to increase demonstrable resistance at least threefold. This protection remains through the twelfth week.

It is believed that sensitization of the immunity-producing mechanism and tissue maturity are factors in the degree of antigenic response and in the maintenance of resistance to infection with avian pneumoencephalitis.—*Univ. Pennsylvania Bull., April 3, 1951.*

Rabies killed 52 people in Japan during 1950. There were 867 cases in dogs.

The Histoplasmin Skin Test in Animals

ROBERT W. MENGES, D.V.M.

Kansas City, Kansas

RECENTLY, there has been increasing interest in histoplasmin sensitivity among the various domestic animals.^{1,2,3} The antigens and the skin-testing methods used for animals are described herein.

Antigens.—Histoplasmin is a filtrate of a broth culture of *Histoplasma capsulatum*. Various lots of histoplasmin have been produced, all varying in potency. Table I shows the lots used by the U. S. Public Health Service, with recommended dilutions for the various animals.

testing sheep. In swine, the skin near the base of the left ear was used. Poultry have been tested using the left wattle, similar to the tuberculin test.

Procedure.—Clip the hair from a small area to facilitate reading and to mark the site of injection. Swab the area with 70 per cent alcohol. Inject 0.1 cc. of histoplasmin intracutaneously, employing a 1-cc. glass tuberculin syringe with a $\frac{1}{4}$ -in., 25 to 27 gauge, intradermal needle.

Reading the Test.—The test is read at forty-eight hours by observing and palpating the induration or thickening. The induration is meas-

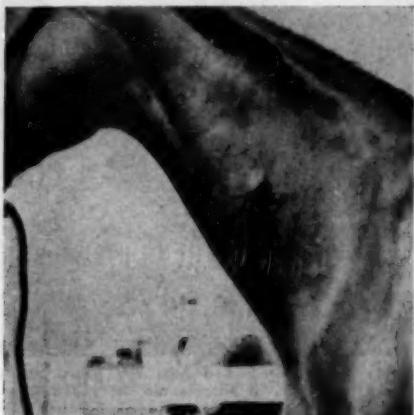


Fig. 1.—Saddle mare, 7½ years old, a reactor to 0.1 cc. of histoplasmin, lot 3 and 4, undiluted. Reaction, 38 mm.; site of injection, left cervical area.



Fig. 2.—Guernsey dairy cow, 8½ years old, a reactor to 0.1 cc. of histoplasmin, lot 3 and 4, undiluted. Reaction, 42 mm.; site of injection, left cervical area.

The dog is the only domestic animal for which the dose has been properly titrated.⁴

Site of Injection.—In the early work done on cattle, the caudal fold was the site of injection.⁵ Recent workers,⁶ have shown that the neck region in cattle is the most sensitive area for intracutaneous testing. Histoplasmin tests were made in a few herds of cattle to compare the relative area sensitivity of the caudal fold and the cervical region. The cervical area was found to be the most sensitive. The cervical test is now used for cattle and horses, and may also be used for dogs and cats. Cole *et al.*² used the medial aspect of the flank skin fold for dogs.

The skin of the left lower eyelid was used for

ured in the horizontal diameter using a millimeter (metric) scale. A reaction is called *positive* when there is a definite induration 5 mm. or more in diameter.

In most cases, it is not difficult to determine a positive reactor as indicated by the accompanying photographs. Figure 1 shows a typical reaction in the horse. There is a definite swelling, which is usually firm. The reaction of the dairy cow (fig. 2) demonstrates a more flattened thickening of the skin. Occasionally, involvement of the lymphatics of the cervical region has been observed in dairy cattle. In such cases, enlargements have been noted extending from the site of injection. The Hampshire ewe (fig. 3) shows a typical reaction in sheep. There was a definite swelling of the skin of the lower eyelid. Reactors among sheep are sometimes difficult to observe when the

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swelling is only slight. The chicken (fig. 4) has a very marked swelling of the wattle which is easily observed.

It should be noted that a positive re-



Fig. 3—Hampshire ewe, 7 years old, a reactor to 0.1 cc. of histoplasmin, lot 3 and 4, undiluted. Reaction, 15 mm.; site of injection, skin of left lower eyelid.

action to the histoplasmin skin test does not necessarily indicate an active infection with *H. capsulatum*. It may indicate either past or present infection. In areas where the histoplasmin sensitivity rates among animals are high, the skin test is of little diagnostic value. In these areas, blood

TABLE I—Lots of Histoplasmin and Recommended Dilutions

Histoplasmin (lot)	Dilution	
	(horses, cattle, sheep, swine, poultry)	(dogs, cats)
H-15	1:10	1:100
H-40	1:5	5:100
H-42	Undiluted	1:10
H-3 & 4	Undiluted	1:10

is obtained and tested using the complement-fixation test for histoplasmosis.⁶ A positive reaction indicates the probability of active histoplasmosis. The complement-fixation test for histoplasmosis has not been fully investigated for animal serums; however, it has been shown to be a satisfactory test for human serums.

In man, critical illness exerts a depressing effect on the skin sensitivity to tuberculin and to histoplasmin.⁷ Thus, one

might expect a negative histoplasmin skin test in animals critically ill.

Extensive histoplasmin skin testing of animals in Kansas and Missouri has shown that age and place of residence are important factors.⁸ In all the species tested, histoplasmin sensitivity rates increased with age, the rates being low in young animals and increasing in older ones. Histoplasmin sensitivity rates have also been shown to vary, depending on place and length of residence. Histoplasmin sensitivity was absent in cattle in western



Fig. 4—Rhode Island Red hen, 1½ years old, a reactor to 0.1 cc. of histoplasmin, lot 3 and 4, undiluted. Reaction 20 mm.; site of injection, left wattle.

Kansas, while the rates increased as one moved eastward.¹ In central Missouri, the rates were much higher than in eastern Kansas. These findings for animals follow a pattern similar to that reported for man.⁹ For histoplasmosis in man, the eastern central part of the United States has been determined as the endemic area.⁹

SUMMARY

The method of histoplasmin skin testing the various domestic animals is described. Positive reactions observed in the horse, cow, sheep, and chicken are described, and photographs show the reactions.

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Isolation of Newcastle Disease Virus from the Great Horned Owl

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Columbus, Ohio

On April 15, 1950, a Great Horned Owl (*Bubo virginianus virginianus*) was submitted for diagnosis from the Columbus Zoological Park. The history indicated the owl had been presented to them six weeks previously by a local farmer who had captured the bird on his premises. Two weeks after arrival at the Zoo, nervous symptoms characterized by torticollis and opisthotonus appeared.

Examination at the time of admission revealed a well-developed individual, in good physical condition showing torticollis and opisthotonus.

Hemagglutination-inhibition (HI) tests were conducted using techniques recommended by the U.S. BAI¹ with blood serum obtained by cardiac puncture. When chicken erythrocytes were used, a heteroagglutina-

tion reaction occurred between the serum of the owl and the chicken cells. The owl was bled again two days later and a second hemagglutination-inhibition test was conducted using turkey erythrocytes. A titer of 1:160 was obtained.

At the time of the second bleeding, the bird died. Autopsy revealed an exudate on the air sacs similar to those observed in chickens affected with Newcastle disease (avian pneumoencephalitis). No other gross lesions were observed. A pooled sample of spleen, brain, serous membranes, and lungs was treated with 5,000 units each of penicillin and streptomycin and injected via the allantoic cavity into four fertile eggs which had been incubated at 38 C. for nine days.

Four days following inoculation, the 4 embryos were dead. Cultural examination failed to reveal bacterial infection and hemagglutination tests conducted on the allantoic fluid revealed a titer of 1: 160. Second egg passage of the recovered virus revealed a titer of 1: 1,280 on subsequent hemagglutination test. The virus was neutralized by Newcastle disease antiserum. The virus was sent to the U.S. BAI Pathological Division and was identified as Newcastle disease virus.

It is the purpose of this report to record another natural host for Newcastle disease virus. Several wild birds have been reported as susceptible to this virus,^{2,3,4} however, no record is present in the literature indicating that the Great Horned Owl has previously been found naturally infected.

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If any vaccine is to be used as an excuse to let reactors remain in the herd, then that vaccine should be withdrawn and not used.

—J. F. Huddleson, D.V.M., quoted in Hoard's Dairyman, April 25, 1951.

Dr. Ingalls and Miss Mahoney are from the Department of Veterinary Pathology, Ohio State University; Dr. Vesper is a practitioner in Columbus.

NUTRITION

"Steatitis" or "Yellow Fat" in Mink, and its Relation to Dietary Fats and Inadequacy of Vitamin E

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Rochester, New York, and New Holstein, Wisconsin

THE SEASONAL occurrence of a disease in young mink, characterized by brownish discoloration ("yellow fat") and inflammatory changes (steatitis) in adipose tissue, has been recognized for a number of years in various parts of this country. The economic losses resulting from the disorder have been great. Outbreaks occur usually in late July and early August and sometimes in late September, and primarily affect the young kits during the early postweaning period, at ages of 10 to 20 weeks. Male mink, whose food intake and rate of growth are greatest, usually are most susceptible.

The symptomatology and histopathology of the disease have been described in considerable detail by McDermid and Ott,¹ Quorstrup, Gorham, and Davis,² and Hartsough and Gorham³.

Food poisoning, excess intake of protein, and inadequacy of one or more of the B vitamins have been proposed as causative factors, but convincing evidence is lacking. Hartsough and Gorham³ emphasize relationships between sporadic occurrence of the disease and the feeding of relatively large proportions of long-stored frozen meats and fish products. They state that outbreaks of the disease can be arrested by immediate substitution of fresh horsemeat and fresh liver. This suggests that the malady is related to the ingestion of a substance, or substances, present in storage meat and fish products but not in fresh meat; yet, it does not preclude the possibility of an associated vitamin or other dietary deficiency.

The macroscopic and microscopic appearance of the adipose tissue of affected mink bear a close resemblance to the conditions observed by Mason *et al.*⁴ and Granados *et al.*⁵ in rats fed rations low in vitamin E and containing relatively large amounts (10-20%) of cod liver oil, or its equivalent as the most highly unsaturated fraction of this

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These studies were supported, in part, by a grant to one of us (KEM) from the Nutrition Foundation, Inc., New York City.

oil. Under these experimental conditions, fat cells and macrophages of adipose tissue progressively accumulate a brownish-yellow pigment with characteristic acid-fast staining properties. This ap-

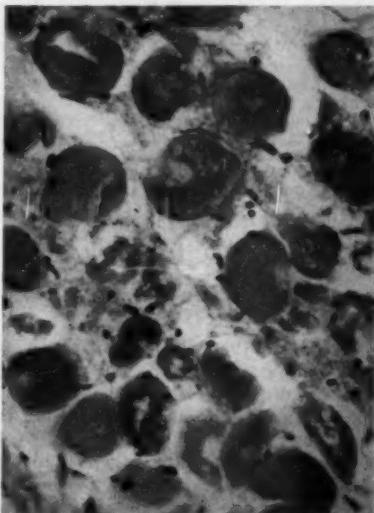


Fig. 1.—Skeletal muscle fibers, in cross section, from mink dying with steatitis. There is extensive interstitial edema with variable degrees of hyalinization, necrosis, and vacuolization of fibers. x 285.

pears to represent polymerized unsaturated fatty acids or a lipoprotein complex. Once established, the histologic changes are quite resistant to modification by vitamin E therapy.

The particular susceptibility of young kits, the sudden onset of the disease, frequent evidence of muscle paralysis, and a comatose state prior to death without pathologic findings of particular note closely parallel conditions noted by Filer *et al.*⁶ during the second and third months of life in many rats placed at weaning on low vitamin E rations high in unsaturated fat, but not observed

in animals put on experiment about ten days later. When mothers and their litters are placed on such rations at the time of delivery, Rumery⁷ has noted a 100 per cent mortality in the offspring before the twenty-fifth day of life. Thus, there is a di-

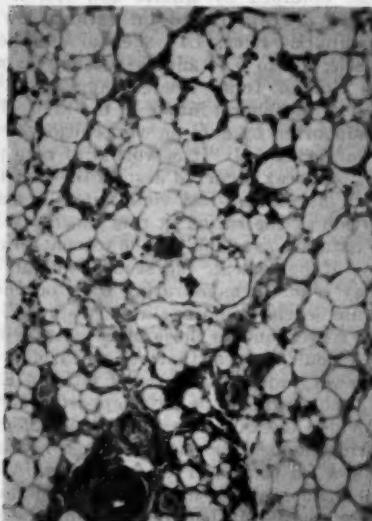


Fig. 2—Omental fat from same mink in figure 1. Note dark-staining, pigment-laden macrophages between and sometimes surrounding fat cells; also occurring as dense aggregates in connective tissue (bottom center). Vascular congestion is marked. $\times 66$.

minishing susceptibility with increasing age and maturity. The studies by Filer *et al.*⁸ indicate that unsaturated fatty acids containing at least 18 carbon atoms and possessing at least two double bonds are necessary for the production of these changes. Such types of fatty acids are especially abundant in fish oils, and their capacity to invoke tissue changes may be increased by rancidity. The capacity of rats to tolerate large amounts of these unsaturated fats when relatively small tocopherol supplements are provided (0.20 mg. *alpha* tocopherol, daily) is quite remarkable.

Our report presents evidence that both factors discussed above, that is, a relatively large intake of unsaturated fats and a concomitant inadequate intake of tocopherols, operating at a stage of life when mink are especially susceptible, play an important role in the etiology of this disease.

After completing these studies, we had the privilege of reading, through the kindness of Dr. John Gorham, an unpublished preliminary report on a direct experimental approach to this problem. These studies by Gorham *et al.*⁹ show that mink kits raised on rations containing a high proportion

(85%) of fresh frozen ocean fish scrap show considerable accumulations of acid-fast pigment in the adipose tissue, even in the absence of symptoms of steatitis. Especially noteworthy is the observation that oral administration of mixed natural tocopherols, or the addition of sufficient wheat germ meal to the experimental ration, prevents these changes. Although the studies reported in the present communication constitute a more indirect body of evidence on this same question, they supplement and extend the findings of Gorham *et al.*⁹ and justify recording as further evidence of the role which dietary fats and inadequacies of tocopherols undoubtedly play in the etiology of steatitis.

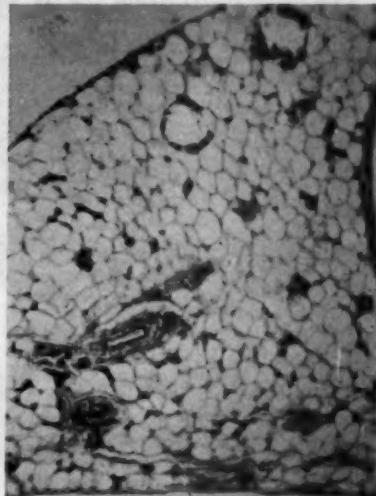


Fig. 3—Paraovarian fat from presumably healthy mink at pelting season. Fat pigmentation resembles that seen during outbreak of steatitis in same ranch several months previously (fig. 2); but there is no vascular congestion. $\times 66$.

HISTOLOGIC OBSERVATIONS

The histologic material studied was derived from Wisconsin and New York State ranches.

In 1947, following the report of McDermid and Ott,¹ formalin-fixed samples of adipose tissue, liver, and kidney from mink dying of steatitis were provided by Dr. McDermid for study. The adipose tissue showed a widespread "egg-shell" type of reaction, characterized by thin acid-fast membranes at the periphery of fat globules similar to conditions sometimes seen in the rat. There was also much pigment in con-

necrotic tissue macrophages and moderate fatty infiltration of the liver.

Similar reactions were observed in adipose tissue from 4 mink succumbing to steatitis at two other Wisconsin ranches during early August, 1950. Except for

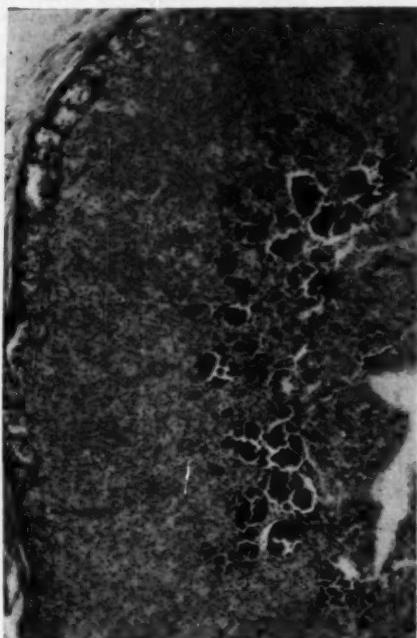


Fig. 4.—Portion of adrenal, from mink at pelting season, showing abundance of pigment-laden macrophages in zona reticularis of the cortex. $\times 66$.

moderate degeneration of skeletal muscle fibers, no significant changes were noted in other tissues and organs examined.

During late September of the same year, there occurred an outbreak of steatitis in a ranch at Ontario, N. Y. Progressive stages of the disorder were strikingly similar to those seen in rats fed low vitamin E rations high in unsaturated fats. The same was true of the microscopic findings on 3 of the affected animals. There was marked dystrophy in skeletal muscles (fig. 1), much acid-fast pigment in macrophages of lymph nodes and adrenals, and variable degrees of pigment deposition in adipose tissue (fig. 2). Panniculitis, encountered to variable degrees in the material from Wisconsin ranches, was not observed. Tocopherol

analyses carried out on fresh samples of livers, skeletal muscle, heart, and adipose tissue gave values of 0.20, 0.33, 0.44, and 1.66 mg./100 Gm. of fresh tissue, respectively.* A comparison of these values with those obtained by Quaife and Harris¹ on tissues of rats raised on rations low in vitamin E—liver, 1.1; skeletal and heart muscle, 0.2 to 0.4; adipose tissue, 1.2 mg./100 Gm. of fresh tissue—suggests a low level of tocopherol intake in the kits. This is supported by data on composition of the ration being fed. It is worthy of note that this outbreak occurred despite the fact that fresh horsemeat had constituted a major portion of the ration at this ranch. While no data are available on the tocopherol content of horsemeat, the studies of van der Kaay *et al.*² demonstrating that tocopherol serum levels in horses are constantly low and correspond to those of cows on winter feed would suggest that horsemeat may not be a very adequate source of vitamin E.

About two months later, opportunity was provided to examine a large series of mink during the pelting season at the same ranch. Yellow fat was observed frequently. While the incidence was much greater in males, there was no difficulty in finding the condition in females if selected on the basis of inferior pelt quality and diminished pigmentation of the ears. For histologic study, samples of lymph nodes, spleen, liver, kidney, adrenal, leg muscle, and fat from different sites were obtained from 12 males and 12 females. Approximately half of the animals in each group were selected because of gross evidence of yellow fat, the other half on the basis of whiteness of the subcutaneous adipose tissue. In 12 of the animals in which fat was grossly white, 4 showed small amounts of pigment histologically. In the remaining animals, there was good correlation between the histologic rating of pigmentation and the gross appearance at autopsy. It was not possible to determine whether any of the kits had previously shown symptoms of steatitis. On the basis of experience with rats, where marked pigmentation of fat may occur in the absence of any symptomatology and persist to a variable degree after many months of vitamin E therapy, it was not surprising to find much pigmentation in ap-

*We are indebted to Miss Mei Yu Dju for carrying out these analyses.

parently healthy kits several months after an outbreak of the disorder.

In this series of animals, pigment was restricted almost entirely to connective tissue macrophages interspersed singly or in groups between mature fat cells (fig. 3). However, it was often impossible to determine whether some of these cells represented young developing fat cells. As commonly observed in the rat, there was a tendency for more pigment to be deposited in para-epididymal and para-ovarian fat depots. Subcutaneous lymph nodes showed accumulations of pigment-laden macrophages more or less proportional to the changes in adipose tissue; the same was true of the adrenal cortex where similar macrophages accumulated in the zona reticularis (fig. 4) in much the same manner as observed by Tobin and Birnbaum¹ in the vitamin E deficient mouse. Especially striking was the abundance of vacuoles or globules, surrounded by rings of acid-fast pigment, widely dispersed in cells of the convoluted tubules of the kidney. In the rat, necrosis of convoluted tubules, often associated with pigment globules, occurs only after prolonged feeding tests. Except for the changes mentioned above, nothing unusual was noted in the various other organs and tissues examined. Skeletal muscles showed none of the damage observed during the acute phases of the disorder.

SUMMARY

Comparisons between gross and histologic findings in steatitis of mink, and those in laboratory rats fed rations high in unsaturated fats and low in vitamin E, indicate that the latter factors play an important role in the etiology of the disorder in mink. These findings confirm and supplement recent studies by Gorham *et al.*² where a more direct, experimental feeding approach was used.

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Pregnant Cow Feces Contain a Chick-Growth Factor

Agreement as to the existence of a chick-growth factor in pregnant cow feces appears to be universal. It seemed desirable to explore the field further.

When the male chicks were fed on a normal growing mash with topical application of extracts of feces from pregnant cattle, they showed a significantly greater body weight, and showed a significant increase in combs and testes.

When female chicks were fed on a 20 per cent level of unextracted but dried feces, significant increases were noted in both body weight and comb size.—*Cow Feces and Chick Development. Science, March 23, 1951.*

Crude casein contains a vitamin or so-called animal protein factor distinct from vitamin B₁₂.—*Science, Feb. 16, 1951.*

If feeding of iodized protein is abruptly stopped, it will take several days for the automatic control to get the thyroid in full production again. Meanwhile, the thyroxin content of the blood will fall far below normal, resulting in decreased milk flow.—*J. S. Hughes, Ph.D., Kansas State College.*

EDITORIAL

The New Insecticides and Pesticides

The tremendous amount of research conducted during the past fifteen years to determine the therapeutic, insecticidal, and pesticidal properties of new and previously untried chemicals has resulted in the introduction into commerce of many new compounds. Some of these compounds may introduce hazards to the welfare of the livestock industry if used carelessly. DDT was introduced before adequate data were available regarding its toxicity to domestic animals. This fact resulted in its careless use in some instances and no doubt cost the lives of some animals. However, many of the new insecticides are not as dangerous to the welfare of the livestock industry directly, or through the residues that may remain on forage crops as are arsenicals, nicotine, and other insecticides which have been used for many years.

Much work has been done in an effort to determine the toxicity of these chemicals on different species and animals of different ages. Animals may be poisoned by eating feed or drinking water contaminated by insecticides or as a result of being sprayed or dusted with them.

The toxicity of the majority of new insecticides varies according to the formulation used. The age of the animal is also an important factor. Young animals, especially calves, are more susceptible to the toxic effects of the chlorinated hydrocarbons than are mature cattle. There also appears to be definite indication of breed variation. Beef cattle appear to be more resistant than the dairy breeds. Pigs appear to be the most resistant of all domestic animals to the toxic effects of these chemicals.

Among the new insecticides which should be of interest and use to veterinarians are lindane, toxaphene, chlordan, methoxychlor, DDT, and TDE (1,1-Dichloro-2,2-bis(*p*-chloro-phenyl)ethane). These substances

are useful for the control of many external parasites of domestic animals. Indirectly, these substances may be used to control insect-borne diseases. Furthermore, the use of these insecticides to control flies on animals results in better gains, greater milk production, and better performance. Cattle grubs and horseflies are resistant to the above named insecticides and it has been repeatedly demonstrated that flies may develop a resistance to some insecticides.

Chlordan and lindane offer excellent means of controlling ticks, fleas, lice, and mange. Methoxychlor and DDT control fleas but are relatively ineffective against ticks and mange.

Some of these insecticides have very definite limitations. DDT should not be used on cats; toxaphene should not be used on either dogs or cats; lindane should be used with extreme caution on cats.

Dry dusts containing variable percentages of insecticides are popular and offer the safest type of external application. However, this formulation requires a higher concentration of the insecticide than a dip and presents a greater hazard if the animals are prone to lick the areas where applied.

TOXIC EFFECTS

The toxic effects of the chlorinated hydrocarbons may be either acute or chronic. All the insecticides mentioned are capable of passing through the unbroken skin or mucous membrane. They are fat-soluble and are stored in the body fat. The symptoms of toxicity may appear under variable conditions. Animals may show symptoms of toxicity soon after being treated or the poisoning may be a cumulative effect with the toxic level being reached only after a period of exposure. In others, the substance may be stored in the body fat and sudden cachexia may release a sufficient amount into the circulating fluids of the body to cause symptoms of poisoning.

DDT residue is very persistent and re-

Dr. Link is chairman of the Standing Committee on Therapeutic Agents of the AVMA, and a member of the USDA Committee on Nomenclature of Insecticidal and Pesticidal Chemicals.

quires several months to be completely eliminated from the body. The residues of lindane and chlordane are not as persistent as DDT. Lindane, methoxychlor, DDT, and TDE have been demonstrated in the milk of lactating animals. Therefore, these chemicals may present a public health problem if improperly used.

Other new insecticides which appear to be too toxic to have any use in the control of external parasites on animals are aldrin, dieldrin, and the organic phosphates. While these substances are very toxic, the residues do not persist on forage or other material for long periods and from this standpoint do not present some of the problems exhibited by some of the other insecticides.

ECONOMIC IMPORTANCE

It is not possible to estimate accurately the potential value of the new insecticides to the livestock industry. However, it must be recognized that it is tremendous and the extent of use of these chemicals will determine their actual value. The persistent effect of one application, particularly for the control of flies, saves labor and provides lasting protection to the animal. This action is not characteristic of the fly repellants which have been used in past years.

Some of the desirable features of these chemicals used for the control of external parasites on animals include their effective use in dry form which is of importance during the cold months when spraying or dipping of animals is impractical. Of these chemicals, only lindane has sufficient odor to render its use offensive under certain circumstances. This is a marked contrast to many of the older products employed for similar effect.

The new pesticides, ANTU, 1080, and warfarin may be hazards to the livestock industry as well as being useful in exterminating rodents which may harbor or spread disease. Of the three, only warfarin has an effective antidote. This substance interferes with prothrombin formation and poisoned animals die as a result of hemorrhage. Vitamin K is an effective antidote. For the others, symptomatic treatment is indicated. There are no specific antidotes.
—ROGER P. LINK.

Even though antibiotic drugs are included, rations must be properly balanced to produce good results.

The Practice of Veterinary Medicine in England

In response to publication of the address of the President at the Miami Beach meeting (October JOURNAL, 1950: 271), we have the following communication from the liaison secretary of the National Veterinary Medical Association of Great Britain and Ireland.

THE EDITOR:

I am afraid that Dr. C. P. Zepp, Sr., in his presidential address to the American Veterinary Medical Association has allowed a very cursory inspection of European veterinary services unduly to prejudice his views.

It is true that bovine tuberculosis today presents a major problem to us in Britain. The 'attested herd' scheme, started in 1935, suffered a grave setback because of the war, but already is has been possible to declare two large areas—one in Scotland, the other in Wales—eradication areas, and it is hoped that soon, perhaps within fifteen or twenty years, the whole country will be free from bovine tuberculosis.

The National Veterinary Medical Association of Great Britain and Ireland has no absolute powers. We are a free association of veterinarians, with a broad responsibility to our members, prime among which is the rapid dissemination of knowledge, and I have no reason to believe that the British veterinary surgeon lags behind his American counterpart in the efficient application of that knowledge in the field. It is true that we, in Britain, have suffered from the curse of the quack veterinarian, but, by the Veterinary Surgeons Act of 1948, unqualified persons who were able to satisfy certain conditions laid down by Parliament were placed on the Supplementary Veterinary Register and permitted to continue in practice, while all others are absolutely banned from any type of veterinary practice. No more than 300 unqualified persons are expected to be registered, as against 5,000 members on the register of veterinary surgeons, so Dr. Zepp's allegation of five quacks to each graduate must be treated with some reserve. There are in fact, only 47 unqualified practitioners on the Supplementary Veterinary Register in the London Postal area, as against 119 registered veterinary surgeons.

Yours very truly,
Neil Mathieson, M.R.C.V.S.,
Liaison Secretary

Keep a mental tab on these newer-of-the-new antibiotic agents, all promising and all now under test: diplomycin, fungicidin, hydroxystreptomycin, lupulon, nemotinic acid, nemotin, thiolutin, prodigiosin, and viomycin.

CURRENT LITERATURE

ABSTRACTS

Salmonella Infection Among Chickens

The authors briefly mention the occurrence of salmonellosis among a flock of chickens belonging to the Veterinary School at Bogor (Java) in 1942 to 1945. They report further that a person, after the consumption of a soft boiled egg, developed profuse diarrhea, headache, and general malaise. The bacteriological examination of the feces revealed the presence of *Salmonella typhimurium* as the etiological factor.—[E. K. Waworoentoe and M. Mansjoer: *Salmonella Infection Among Chickens*. *Hemera zoa*, 57, (1950): 696.]—L.V.E.

Combating Glanders in Indonesia

The prewar system of combating glanders in Indonesia was unsuccessful primarily because of insufficient instruction to the horse owners, lack of personnel in the veterinary service, and the prolonged isolation of the reactors. Therefore, a method was projected of dealing with the disease which enabled the veterinary service to not only destroy horses with typical symptoms of glanders, but also reactors detected by the mallein and complement fraction tests. Furthermore, an increase of the veterinary personnel and a more efficient organization of the work in regard to the control of the disease will be necessary. It is particularly important that the examination of all the horses be undertaken twice a year by diagnostic tests.—[S. Bakker: *Combating Glanders in Indonesia*. *Hemera zoa*, 57, (1950): 699-707.]—L.V.E.

Toxic Chemicals in Agriculture

Numerous acts of Parliament and a multitude of regulations have been designed for the protection of workers in industry. Sprays containing nicotine have been used for years in horticulture and fruit growing. Every adult has probably experienced the first symptoms of nicotine poisoning.

New and more poisonous materials are being used on an ever-increasing scale as the technology of agriculture advances hand-in-hand with developments in applied entomology. These advances in technique and the wider use of chemicals on food crops may carry possible dangers to the consuming public, while very real dangers face the worker who has to handle them.

How dangerous are these chemicals? Dinitro-ortho-cresol and related dinitro-phenol derivatives are used as weed-killers, and seven men applying them in the field have died during the past

five years in Great Britain. A few cases of poisoning, none fatal, have been reported among the men handling parathion, which with T.E.P.P. (tetraethyl pyrophosphate) and "schradan" (octamethyl pyrophosphoramidate) comprise the group of organo-phosphorus derivatives used as insecticides.

These new agricultural "tools" have come to stay, though they may be succeeded at any time by modified compounds with, it is to be hoped, a more selective toxicity to weeds and insects combined with less dangerous characteristics as mammalian poisons. The old chemotherapeutic agents all fell into disrepute because they acted on host and parasite alike. If the same attention is paid to the metabolism of weeds and insects as has been devoted to that of bacteria, there seems no reason to doubt that the future will see the use of insecticides as harmless to man as penicillin.—[No author given: *Toxic Chemicals in Agriculture*. *British M. J.*, (March 24, 1951): 628-630.]

Eastern Equine Encephalomyelitis

A histological and topographical description was made of the lesions in equine brains naturally infected with eastern equine encephalomyelitis virus. The changes are characterized by severe widespread involvement of the gray matter. In early cases, the infiltrating cell is hematogenous, replaced by microglia during later stages. Heavy vascular damage is present. No area of the brain entirely escapes damage; however, the cerebral cortex, hippocampus, and dorsal nuclei of the medulla uniformly show the most severe damage. Clinico-pathological correlations are discussed.—[R. E. Kissling and Harry Rubin: *Pathology of Eastern Equine Encephalomyelitis*. *Am. J. Vet. Res.*, 12, (April, 1951): 100-105.]

Diffusion of Essential Growth Factors from an Induced Penicillin-Resistant Culture to the Parent Penicillin-Sensitive Strain

An attempt was made to determine whether an induced penicillin-resistant strain of *Staphylococcus aureus* could synthesize a diffusible product that might supply the parent (penicillin-sensitive) strain with the essential nutrilites to grow in the presence of a lethal amount of penicillin.

It appears that generally no essential nutrient was supplied by diffusion to enable the penicillin-sensitive strain to reproduce adjacent to the penicillin-resistant strain. These results favor the

theory that penicillin impairs the ability of the culture to assimilate an essential nutrient from the medium, whereas the resistant strain is able to synthesize the substance within its cell. It must also be considered, however, that other mechanisms may be taking place, such as the "learned" ability of the resistant mutant to grow in the absence of an essential factor without producing this factor.—[Joseph L. Stone: *Attempt to Show Diffusion of Essential Growth Factors from an Induced Penicillin-resistant Culture to the Parent Penicillin-sensitive Strain*. *Science*, 113, (1951): 493-494.]

Brucellosis, Some Aspects of Its Epidemiology

From July, 1944, to June, 1949, the author assisted in a study of brucellosis of human patients many of whom showed a high agglutination titer. Table I shows the results in 135 cases.

TABLE I

Titer	Cases	Percentage
Negative	9	6.6
Positive, less than 1/100	6	4.4
Positive, 1/100 - 1/200	20	14.8
Positive, 1/200 - 1/500	73	54.0
Positive, 1/500 - 1/1,000	25	18.5
Positive, more than 1/1,000	2	1.4
Total	135	99.7

In 1926, the incidence of human brucellosis in Spain was 5,000 cases annually with a mortality of 5 per cent. There were as many cases in 1946, but the death rate had been reduced to 2.5 to 3.0 per cent. According to official data, only three provinces in Spain were without cases.

In France, 3,000 cases are reported annually, in Italy approximately 4,000 cases.

About 70 per cent of the cases seen by the author were men. This compares with similar statistics from France and Italy. The highest mortality occurs in those patients 30 to 40 years of age.

As in Argentina and the United States, the incidence of brucellosis is higher in those persons whose work requires them to contact infected animals or their by-products.

The distribution of disease among the several professions of those cases studied by the author were: military, 2; students, 1; veterinarians, 1; merchants, 3; official employees, 3; leather workers, 1; goat herders, 6; livestock employees, 47; farm employees, 25; housewives, 28; and children, 18.

Proposed treatment of clinical cases includes the recommendations of Spink using sulfadiazine and aureomycin, and Herrell and Barter using aureomycin and dihydrostreptomycin in combination.

To effectively prevent and control this disease, the following recommendations were made: (1) diagnosis of animal infections; (2) sale and slaughter of these animals; (3) vaccination and

isolation of human cases.—[L. A. Camacho: *Brucellosis, Some Aspects of its Epidemiology*. *Rev. de San. Hig. Pub.*, 24, (1950): 738.]—GEORGE T. EDDS

Hormonal Influence on the in Vitro Synthesis of Radioactive Fatty Acids

Within the past few years, substantial evidence has accumulated suggesting that experimental diabetes is associated with a major derangement of lipid metabolism.

The results indicate that neither insulin nor the hormones of the pituitary gland are required for the synthesis of fatty acids from acetate by liver. It is likely that the pituitary gland secretes a principle which directly, or indirectly through the mediation of some other endocrine organ, inhibits this process of fatty acid synthesis. The role of insulin in the normal organism appears to be that of an antagonist of the pituitary principle. It seems likely, therefore, that in the normal animal, fatty acid synthesis requires an appropriate balance between insulin and hypophysial activity.—[R. O. Brady, F. D. W. Lukens, and S. Gurin: *Hormonal Influence upon the in Vitro Synthesis of Radioactive Fatty Acids*. *Science*, 113, (1951): 413-415.]

BOOKS AND REPORTS

Methods of Vitamin Assay

This book describes methods of assay for a number of vitamins. Colorimetric, photometric, fluorometric, chemical, microbiologic, and other methods of assay are described for various vitamins, including vitamin A, carotene, vitamin D, vitamin E, vitamin K, ascorbic acid, thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, folic acid, biotin, vitamin B₁₂, *p*-aminobenzoic acid, inositol, and choline. Methods of assay for pantothenic acid, pyridoxine, folic acid, biotin, vitamin B₁₂, and a chemical method for niacin were not described in the first edition whereas they are included in this second edition.

The first chapter of the book deals with the problem of sampling for vitamin analyses. The use and application of the statistic, standard deviation of the mean, are stressed in order to determine the reliability of the mean and in estimating the number of sub-samples necessary in order to attain a desired level of accuracy. A chapter is devoted to microbiologic assay techniques. The principle involved, the equipment and reagents needed, and procedure in carrying out a microbiologic assay are described. The use of check samples in control of vitamin analyses is given consideration in one chapter. The chemistry of each vitamin is also given.

This book, written primarily for the chemist and those individuals directly concerned in assaying materials for the different vitamins, is prob-

ably the most complete source of information on vitamin analyses in regard to the methods and procedures. It has brought together under one cover the desired information in vitamin analyses which the biochemist desires.—[*Methods of Vitamin Assay*, By the Association of Vitamin Chemists, Inc., Cloth, 301 pages. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y. 1951. Price \$5.50.]—M. J. SWENSON.

Veterinary Obstetrics

This 460-page book is a revision and enlargement of the one by Benesch published several years ago. The first part is devoted to the physiology of reproduction and especially of parturition, but is too brief to be of much value to the student and less value to the practitioner who wishes to learn the reason for the obstetrical problems he encounters.

The second part deals with the practical aspects of handling dystocias and is well done so far as farm animals are concerned. It is worth careful attention by any veterinarian. The sections that deal with small animals probably would be questioned by most American small animal practitioners. One difficulty common to European veterinary medical books is that many of the instruments described are unknown to American veterinarians and unobtainable by them.

The final part of the book deals with infertility and attempts to cover the subject in the cow, mare, and bitch in about 60 pages.

It is the opinion of the reviewer that the book should either have been kept as a handbook for the relief of dystocias in large animals, or an adequate presentation of the physiology and pathology of reproduction added. In the first case, the book could have been reduced by half. In the second case, it should be three or four times its present size. Veterinary science has reached a state where a superficial and sketchy treatment is no longer adequate. Both of the authors of this book are well known and distinguished veterinary scientists and clinicians and well qualified to write a real book on obstetrics. Let us hope they do so.—[*Veterinary Obstetrics*, By Franz Benesch and John G. Wright, 459 pages. The Williams and Wilkins Co., Mt. Royal and Guilford Ave., Baltimore, Md. 1951. Price not given.]—G. R. FOWLER.

Questions and Answers—Veterinary

The popular column "Questions and Replies" which appears each month in the *North American Veterinarian* is the source of the material for this book. There are over 500 selected questions, with replies from 138 authorities. These are a reprint of the questions and replies which have appeared in the above mentioned columns from 1945 to date.

In the miscellaneous section, a wide variety of subjects are discussed. Some of these may not have the practical application of others which per-

tain more specifically to diseases and pathological conditions. It is impossible to indicate the breadth of the material furnished by this book. But readers who wish to have a better indication of the type of material it includes are referred to the Questions and Replies column of the *North American Veterinarian*.—[*Questions and Answers—Veterinary*, Edited by J. V. LaCroix and H. Preston Hoskins. Cloth, 201 pages. American Veterinary Publications, Inc., Evanston, Ill. 1951. Price \$4.00.]

REVIEWS OF VETERINARY MEDICAL FILMS

The Triple Threat.—Sound, 16 mm., color; running time approximately twenty-five minutes. Prepared and presented by the U. S. Department of Agriculture, Bureau of Animal Industry. Available from the AVMA Motion Picture Library, 600 S. Michigan Ave., Chicago 5, Ill., for a \$1.00 handling charge plus shipping costs. Also available from state film libraries co-operating with the U.S.D.A. (The list of state film libraries is given in the AVMA Motion Picture Catalog.)

This is an excellent film on brucellosis. Opening with scenes which realistically portray the manner in which brucellosis may be transmitted among cattle, goats, and swine from sources both near and far, this film proceeds to emphasize the economic and public health dangers of this disease and the measures which can be applied toward its effective detection, prevention, and eradication.

Through excellent organization of materials, the film succeeds in providing a scientifically sound, yet down-to-earth approach to brucellosis eradication. The narrative assertion that "brucellosis must go" clearly indicates that at long last a positive stand has been taken in the management of this disease.

The "nostrum peddler" is portrayed pointing up the incurability of brucellosis infection in animals. The early history of brucellosis and the development of Brucella strain 19 vaccine is reviewed. Reference is made to 22 per cent loss in milk production resulting from brucellosis infection which, together with the loss of animals and meat products through abortion and sterility, brings the annual economic loss to the livestock industry to the staggering sum of "\$100,000,000."

Emphasizing the public health implications of brucellosis, Alice Evans reviews the infection she suffered for some ten years, from which the film proceeds to describe the wide-spread human brucellosis infection which, as pointed out in the film, can be prevented only through the eradication of brucellosis within the animal populations.

The film ties together firmly the economic and public health aspects of brucellosis as well as many of the loose ends relating to brucellosis transmission and control which hitherto have tended to confuse livestock owners and the public.

THE NEWS

Candidates in Executive Board Elections

As a result of the nominating elections recently completed in District VI (Arizona, California, Canal Zone and Central America, Colorado, Mexico, Nevada, New Mexico, Utah) and District VIII (Arkansas, Kansas, Louisiana, Missouri, Oklahoma, Texas), the following nominees were listed on election ballots mailed to members in these districts on May 21, 1951.

DISTRICT VI

- Dr. Joseph M. Arburua, San Francisco, Calif.
- Dr. D. K. Collins, Long Beach, Calif.
- Dr. N. J. Miller, Eaton, Colo.
- Dr. L. E. Patton, Albuquerque, N. M.
- Dr. C. E. Wicktor, Los Angeles, Calif.

DISTRICT VIII

- Dr. W. W. Armistead, College Station, Texas
- Dr. I. B. Boughton, College Station, Texas
- Dr. W. G. Brock, Dallas, Texas
- Dr. S. W. Haigler, St. Louis, Mo.
- Dr. C. H. McElroy, Stillwater, Okla.

Drs. W. A. Young and E. R. Maschgan of Chicago served as a board of tellers on May 15 and certified the foregoing results.

The polls will close on July 20, 1951, and the successful candidates will take office for five-year terms at the conclusion of the annual meeting of the Executive Board in Milwaukee in August.

Veterinarians Eligible for Deferment Under New Selective Service Law

Largely through the efforts of Dr. Geo. W. Gillie, former Congressman from Fort Wayne, Ind., veterinarians will be specifically mentioned as eligible for draft deferments under the new Selective Service law. The new draft law, known as S-1, is at the time of going to press, still being considered by a House-Senate conference committee. Reversing the former policy of Congress of not spelling out deferment categories, the joint committee specified that physicians, dentists, optometrists, and osteopaths should be eligible for deferments. Veterinarians were not included until Dr. Gillie went to Washington, D.C., and explained the necessity for having veterinarians included in the category of professional personnel whom local boards should consider eligible for deferments. Although S-1 has not been reported out of committee at the time this is being written, Dr. Gillie has been assured that veterinarians will be included with the other profes-

sional groups when the bill is presented to the House and Senate for final vote.

The secretaries and chairmen of the emergency advisory committees of several state associations also responded promptly when asked by the AVMA staff to support Dr. Gillie's efforts with telegrams to their congressmen and senators. It appears that what might have been a serious matter for veterinarians was averted by the prompt action of Dr. Gillie, the AVMA staff, and key persons in several states.

Drs. Newsom and Birch Return From European Trip

Dr. I. E. Newsom, former president of Colorado A. & M. College, Fort Collins, and Dr. R. R. Birch, research professor at New York State Veterinary College, Cornell University, Ithaca, returned to this country in April after a five-month survey of animal diseases in 14 European countries at the request of the Organization for European Economic Cooperation.

They found the Scandinavian countries, England, and Switzerland far advanced in the control of most animal diseases. Since World War



Dr. I. E. Newsom

II, foot-and-mouth disease has broken out in many places where it had been eradicated and is by far the most serious disease in many of the countries visited. England and Ireland were

free of it at the time of the survey, as were Denmark and Switzerland, but it broke out in the latter two countries a month later. Holland, Belgium, Germany, France, and Italy are other countries in which efforts are being made to control this disease.



Dr. R. R. Birch

Other diseases of economic significance in these countries are brucellosis, tuberculosis, mastitis, and Newcastle disease. Dr. Newsom noted that Europe is far in advance of this country in control of hog cholera.

NRC Reports on Nutrient Allowances Available

Dr. E. P. Johnson, AVMA representative to the Division of Biology and Agriculture of the National Research Council, reports that veterinarians may obtain copies of the six reports on recommended nutrient allowances for various domestic animals and poultry by writing directly to the National Research Council, 2101 Constitution Ave., Washington 25, D. C. Dr. Johnson says that these should be of interest to every veterinarian.

Two Student Clubs Affiliate as AVMA Student Chapters

The favorable vote of the AVMA Executive Board upon the requests for affiliation of the student veterinary clubs at Oklahoma A. & M. College and the University of Minnesota as AVMA student chapters increases the total number of student chapters to 16. Requests for affiliation of student clubs as official chapters hinges upon approval of the school or college of veterinary medicine by the AVMA Council on Education, a request for affiliation from the student organization approved by the dean, and the favorable vote of the Executive Board.

These latest additions to the student chapter roll represent an increase of five officially affiliated chapters during the past two years.

Affiliation of the student organizations as AVMA chapters makes available several services to students in schools having chapters. These include: (1) the AVMA JOURNAL and the *American Journal of Veterinary Research* at a special student subscription rate; (2) gold keys and certificates of student chapter membership from the AVMA; (3) key ring medallions and student chapter membership cards from the Association; (4) registration at annual conventions without charge; (5) other services such as free use of AVMA films, booklets, and special prices on other publications such as the "Proceedings Book" and the "Directory"; and (6) admission into AVMA membership without the payment of the \$5.00 membership fee.

Second International Congress of Reproduction and Artificial Insemination

The International Standing Committee, appointed at the Milan Congress in 1948, having examined the possibilities for holding the next Congress, has agreed that the Second International Congress of Physiology and Pathology of Animal Reproduction and of Artificial Insemination will be held in Copenhagen, Denmark, from July 7 to 10, 1952, with the following program:

- 1) The Physiology of Reproduction.
- 2) The Pathology of Reproduction.
- 3) Artificial Insemination of Domestic Animals.

The Standing Committee has nominated Dr. John Hammond, School of Agriculture, Cambridge, England, as president; Professor Nils Lagerlöf, Stockholm, as vice-president; and Professor Ed. Sorensen, Copenhagen, as secretary-general.

The Congress is sponsored by the Danish Ministry of Agriculture and will be organized by the Royal Veterinary and Agricultural College, Copenhagen, the Danish Federation of Cattle Breeding Societies for Artificial Insemination, and the Society of Danish Veterinary Surgeons.

A more detailed, tentative program will be issued as soon as possible. All particulars are obtainable from the secretary-general, Prof. Ed. Sorensen, The Royal Veterinary and Agricultural College, Bulowsvej 13, Copenhagen, V., Denmark.

**When moving, notify the AVMA Office
600 S. Michigan Ave., Chicago 5, Ill.**

Proposed Amendments to Constitution and Administrative By-Laws

The following amendments which were presented at the 1950 annual meeting of the House of Representatives (*see "Proceedings Book,"* 1950: 356, 376) will be submitted to the House for final action at the annual meeting in Milwaukee, Wis., Aug. 18, 1951. They are published again for the information of the membership and in accordance with Section 3, Article IX of the Constitution so that final action can be taken this year.

Amendments Presented in 1950

AMENDMENT No. 1

To re-define General Membership, present paragraph (b) of Article III, Constitution, is to be replaced by the following:

b) *General Membership.*—The general membership, otherwise known as the active membership, shall consist of graduates of colleges of veterinary medicine who have been duly elected in the manner specified in the By-Laws.

[Purpose.—To remove ambiguities and detailed membership requirements from the Constitution. Detailed requirements are covered in the proposed amendments to the By-Laws.]

AMENDMENT No. 2

To include a definition of Life Membership, present paragraph (d) of Article III, Constitution, is to be replaced by the following:

d) *Life Membership.*—The life membership shall consist of members who have been so designated in accordance with the Administrative By-Laws.

[Purpose.—To provide a new membership category in the Constitution as defined in the appropriate section of the By-Laws. Requirements for life membership are defined in new proposal No. 10 as Section 6 of Article X of the By-Laws.]

AMENDMENT No. 3

To amend present paragraph (d) Article III, Constitution, and replace it with paragraph (e) Article III, Constitution, so that it will read as follows:

Student Chapter Membership.—The student chapter membership shall consist of members in good standing of the student chapters officially chartered by the Association and maintained in accordance with the Administrative By-Laws. [Purpose.—To make the references to student chapter membership uniform throughout the Constitution and Administrative By-Laws.]

AMENDMENT No. 4

To amend Section 2, Article IV, Constitution, relating to state, territorial, and provincial veterinary associations so as to read as follows:

Section 2.—The term "state, territorial and

"provincial association" shall be understood to mean the principal veterinary organization of any state of the Union, territorial possession of the United States including the District of Columbia, and provinces of the Dominion of Canada, whose membership requirements are equal to those of the American Veterinary Medical Association.

[Purpose.—To make this section compatible with Section 1, Article IV, in so far as membership requirements of the constituent associations are concerned.]

New Proposals

The following new proposals for amendments to the Administrative By-Laws were approved by the Executive Board at its winter meeting for submission to the House of Representatives for final action at the annual meeting of the House Aug. 18, 1951, in Milwaukee, Wis. They are published for the information of the membership and in accordance with Section 3, Article XVIII, of the Administrative By-Laws.

NEW PROPOSAL No. 1

To amend Section 2, Article X, of the Administrative By-Laws relating to active members by replacing the present Section 2 with the following:

Section 2.—Active members, or the general membership, shall consist of graduates of colleges of veterinary medicine in the United States and Dominion of Canada that were approved by the Council and/or Committee on Education at the time of the applicant's graduation, or of graduates of foreign veterinary colleges that are approved by the Executive Board for membership purposes, and graduates of veterinary colleges formerly conducted in the United States which are approved by the Executive Board for membership purposes.

[Purpose.—To clearly define the schools from which graduates are eligible for membership and to place the responsibility for designating acceptable applicants upon the Executive Board.]

NEW PROPOSAL No. 2

To replace present paragraph (a) of Section 2, Article X, Administrative By-Laws, with the following:

a) *Election to Active Membership.*—Candidates for membership shall present an application to the executive secretary on a special form approved by the Board of Governors. The form shall state the applicant's name, age, address, education (school and year of graduation), and work in which the applicant is engaged. Applicants residing within the jurisdictional limits of a constituent association, except personnel of the

Veterinary Corps and the United States Public Health Service, must obtain the certification of the secretary of the constituent association that has jurisdiction over the area in which the applicant is engaged in the pursuit of his profession, that the applicant has applied for or is a member in good standing of that constituent association. Applications from applicants who have only applied for membership in a constituent association shall be held in abeyance until notice is received from the secretary of said constituent association that the applicant is a member in good standing of that constituent association. Applicants residing outside the jurisdictional limits of the constituent associations shall obtain the endorsement, on the application, of two members who know the applicant, one or preferably both of whom reside in the same country as the applicant.

The American Veterinary Medical Association reserves the right to reject the application of any member of any constituent association. (As amended at the 85th Annual Meeting, Aug. 16-19, 1948.)

[Purpose.—To clearly define the eligibility of applicants for membership relative to their membership in a constituent association.]

NEW PROPOSAL NO. 3

To revise paragraph (b) of Section 2, Article X, by having paragraphs, 1 and 2, under (b) which pertain to the listing of applicants in the JOURNAL, read as follows:

1) The names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

2) Notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school and year of graduation, post office address, and the names of his endorsers. The applicant shall be declared elected and so notified thirty days after the final notice has been published, provided that, in the meantime, no objection to his election has been filed in writing. Objections to an applicant's election shall be subject to review and action by the Executive Board and decisions thereon shall be contained in the report of the Board to the House of Representatives. (As amended at the 78th Annual Meeting, Aug. 10-15, 1941.)

[Purpose.—To avoid unnecessary listings of names of applicants who are already members of constituent associations and save space in the JOURNAL.]

NEW PROPOSAL NO. 4

To substitute the following for present paragraph (c) of Section 2, Article X, Administrative By-Laws, which relates to the educational requirements of applicants:

c) *Educational Requirements.*—The "Essen-

tials of an Acceptable Veterinary School" as defined by the Council on Education, or the accepted standards for an approved school at the time of the applicant's graduation, shall be considered the educational requirements of applicants, except for: (1) graduates of veterinary colleges formerly conducted in the United States, and (2) graduates of foreign veterinary colleges which have been approved for membership purposes by the Executive Board.

[Purpose.—To remove unnecessary detail in the By-Laws by referring to the "Essentials of an Acceptable Veterinary School" as prepared by the Council on Education and to delegate to the Executive Board the final decision on applicants who are not graduates of an approved school.]

NEW PROPOSAL NO. 5

To substitute for the present paragraph (b), of Section 3, Article X, Administrative By-Laws, which pertains to dropping members from the AVMA and constituent associations, the following paragraph which was inadvertently omitted from the present printing of the By-Laws:

b) Members who have not paid their annual dues by April 1 of the current year shall be dropped from the subscription list of the JOURNAL, in compliance with postal regulations governing the mailing of second class matter.

[Purpose.—To reinstate this paragraph in the By-Laws relative to discontinuing the mailing of JOURNALS to members who are in arrears in their dues payment.]

NEW PROPOSAL NO. 6

To amend paragraph (g), Section 3, Article X, Administrative By-Laws so that it will read as follows:

g) The JOURNAL shall be mailed only to members in accordance with section 3, paragraph (b) of this article and, by subscription, to reputable research laboratories, libraries, and schools; individuals and other institutions desiring the JOURNAL must be vouched for by the respective constituent associations.

[Purpose.—To make paragraph (g) refer to above paragraph (b) instead of paragraph 6.]

NEW PROPOSAL NO. 7

Add a new paragraph (h) to Section 3, Article X, Administrative By-Laws, which relates to the dropping of members from the AVMA and constituent associations, to read as follows:

h) When constituent associations adopt reciprocity of membership with the Association (*i.e.*, accept applications only from applicants who are, or who have applied for, membership in the American Veterinary Medical Association, and drop members from their association when they are dropped from membership in the American Veterinary Medical Association), the Association will also drop from its membership

any member who is dropped from the constituent association when so notified by the secretary of the constituent association. However, whether a constituent association has adopted reciprocity of membership or not, when members are expelled or dismissed from a constituent association for reasons of unethical conduct or other behavior detrimental to the profession, they will also be dropped from membership in the American Veterinary Medical Association when the executive secretary is so notified by the secretary of the constituent association.

[Purpose.—To clarify the relationship of membership in a constituent association to AVMA membership and to make reciprocity of membership possible.]

NEW PROPOSAL NO. 8

To delete Section 4, Article X, Administrative By-Laws, and replace with the following:

Section 4.—Student Chapter Members: (a) A student of an approved college of veterinary medicine which has a student chapter of the American Veterinary Medical Association may become a student chapter member by maintaining membership in his local student chapter. Student chapter members are entitled to all the privileges of active members at the annual session, except the right of franchise, and shall be furnished an official badge without payment of the registration fee.

[Purpose.—To make the reference to student chapter members uniform throughout the Constitution and Administrative By-Laws. Provisions of present Section 4 are covered in New Proposal No. 2.]

NEW PROPOSAL NO. 9

To transfer paragraph (a) of Section 5, Article X, Administrative By-Laws, to Section 4 and make it paragraph (b), and to make the wording uniform relative to student chapter members, the following changes are necessary (changes are in italics):

b) *Student Chapter Members.*—*Student chapter members recommended as having been members in good standing for two years in their respective student chapters and who are vouched for by two members of the AVMA may be admitted to membership without the payment of the membership fee, provided the applications are filed within thirty days after the date of their graduation.* To retain membership in the Association, members admitted under these provisions from *student chapters* must, within a period of three years following graduation, join a constituent association.

[Purpose.—To make paragraph (a) of Section 5 a subsection of the Section 4 on student chapter membership instead of a subsection of the honorary membership paragraph.]

NEW PROPOSAL NO. 10

To define life members, a new Section 6, of Article X, Administrative By-Laws, has to be added as follows:

Section 6.—Life Members: Members who have been in good standing in the Association for twenty-five years and who are not less than sixty-five years of age, and who, in the opinion of the Executive Board, should be relieved of further payment of dues, may be designated as life members, upon recommendation of the Executive Board and a majority vote of the House of Representatives. While life members may not hold office, they shall be allowed to participate in all regular meetings of the association, and shall be exempt from payment of dues.

Scholarship Awarded by Texas State Association

The need for veterinarians in the large animal field and the desire to help a boy interested in becoming a veterinarian prompted the Houston Veterinary Medical Association to set up a \$3,000-scholarship fund, sufficient to pay a student's way through a six-year course of veterinary medicine at Texas A. & M. College. The scholarship is administered through the Harris County Agricultural Youth Scholarship Fund of the Houston Chamber of Commerce.

Foster Lee Meier, 17, Spring Branch, Texas, was selected from Harris County FFA and 4-H boys (he is active in both organizations) for his outstanding record as a leader in his community, agricultural projects, scholastic ability, and personality. Final selection was made by a committee of three men—Drs. Barney Myatt, president of the Houston Veterinary Medical Association; Jack Whitehead, member of the Association; and I. B. Bough-



Dr. Barney Myatt (left), Foster Meier, and Dr. Jack Whitehead.

ton, dean of the School of Veterinary Medicine at Texas A. & M. College.

Ten more scholarships will be given by this group to 4-H, FFA, and FHA boys and girls in Harris County.

STUDENT CHAPTER ACTIVITIES

Iowa State Chapter.—A summary of activities of the Iowa State College Student Chapter of the AVMA for Feb. 15 to May 16, 1951, follows.

Guest speakers for the four meetings held during this period were Drs. C. W. Brown, veterinarian in charge of the BAI, Des Moines; and I. E. Hayes, Waterloo; and Mr. R. J. Lowther, lawyer, Ames.

At the May 16 meeting, Dr. Dwight Smith made the awards to the Moss Essay contest winners, Richard Searl, Marvin E. Clark, and William O'Brien. Paul Gorham was selected to represent the chapter at the AVMA convention in Milwaukee, and Roland Bunge was selected as winner of the Women's Auxiliary to the AVMA award.

The following officers were elected at this meeting: Neal Chapin, vice-president; Wayne Faber, secretary; Clifford Denham, treasurer; John D. Baker, critic; Russel Anthony, president-elect; and Dr. Worthman, faculty advisor. Former president-elect Fred Hussman became the new president of the chapter.

S/GORDON ESBECK, *Retiring Secretary.*

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Pennsylvania Chapter.—On Feb. 14, 1951, 52 members of the Pennsylvania Student Chapter of the AVMA heard Dr. C. O. Neuhaus, state BAI, discuss the history of the disease control programs of his bureau. A film, "The Science of Milk Production," was shown at the March 7 meeting. Dr. Miller, track veterinarian for Garden State and Atlantic City Race Tracks, discussed his duties as track veterinarian at the March 21 meeting. On April 4, Dr. W. C. Glenney, Ardmore Animal Hospital, showed his personal films which covered a variety of subjects from bovine prolapse of the uterus to the pregnancy test in rabbits. There were 105 members present at this meeting. Dr. Ferris, (M.D.), director of Wistar Institute, was guest speaker at the April 20 meeting. The following officers were elected at the May 2 meeting: Lynn R. Derby, president; Laurs Nilsson, Jr., president-elect; Stewart Fox, secretary; and Richard Lescallette, treasurer. The films "Stader Splint," "Canine Nerve Blocks," and "Partners (man and dog)" were shown.

S/LYNN R. DERBY, *Secretary.*

WOMEN'S AUXILIARY

Mrs. Coombs, Recorder for the Auxiliary House of Representatives.—Mrs. Alfred E. Coombs, Skowhegan, Maine, has been active in the Maine Veterinary Auxiliary and at present is vice-president of that organization. She is interested in her church, in local charities, and other organizations, and is now president of the

Skowhegan Women's Club. As recorder for the House of Representatives of the Women's Auxiliary to the AVMA, Mrs. Coombs records the business transacted at the meeting of the House and submits a report to the general session of the Auxiliary.

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Kansas City Auxiliary.—The Women's Auxiliary to the Kansas City Veterinary Medical Association met in the Hotel Continental on May 15 for a business session and to hear Miss Penelope Boxmeyer speak on occupational therapy in rehabilitation.

S/K. M. CURTS, *Secretary.*

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New Hampshire Auxiliary.—The Women's Auxiliary to the New Hampshire Veterinary Medical Association met at the Beau Reve Hotel in Bedford on April 26. After a cocktail hour and banquet, members of the auxiliary held a business meeting.

APPLICATIONS

The listing of applicants conforms to the requirements of the Administrative By-Laws—Article X.

First Listing

- AULET, ARTURO ALBAREDA
Calle C #710, Vedado, Havana, Cuba.
D.V.M., University of Havana, 1938.
Voucher: Angel M. Morales.
- BROWN, ELMER L.
P.O. Box 285, Moose Jaw, Sask.
B.V.Sc., Ontario Veterinary College, 1917.
Voucher: A. Chambers.
- COPPAGE, WILLIAM F.
N. Haughton St., Williamston, N. Car.
D.V.M., Alabama Polytechnic Institute, 1945.
Voucher: J. H. Brown.
- DOWNING, THEODORE O.
Sixth Army Area Medical Laboratory,
4735 East Marginal Way, Seattle 4, Wash.
V.M.D., University of Pennsylvania, 1943.
Vouchers: J. F. Crosby and R. E. Conner.
- GRUSH, KENNETH W.
3070 E. 3rd Ave., Durango, Colo.
D.V.M., Colorado A. & M. College, 1950.
Voucher: John W. Harrison.
- HARRIS, BYRON D.
418 S. Montreal Ave., Dallas 8, Texas.
D.V.M., Texas A. & M. College, 1949.
Voucher: E. A. Grist.
- HIGHT, ROBERT J.
820 Forrest Ave., Tempe, Ariz.
M.D.C., Chicago Veterinary College, 1907.
Voucher: Donald L. Fox.
- HOREL, HARVEY E.
Augusta, Wis.
M.D.C., Chicago Veterinary College, 1911.
Voucher: B. A. Beach.

- JACKSON, R. SCOTT**
Veterinary Medical Bldg., Colorado A. & M. College, Fort Collins, Colo.
D.V.M., Colorado A. & M. College, 1946.
Voucher: Earl D. Smith.
- JONES, BARRINGTON R.**
9115 Ogden Av., Brookfield, Ill.
M.R.C.V.S., Royal Veterinary College, 1948.
Vouchers: L. A. Dykstra and D. A. Rickards.
- LEONARD, CHARLES W.**
91 Cherokee St., Lafayette, Ga.
D.V.M., University of Georgia, 1950.
Voucher: Chas. C. Rife.
- LINDEN, BENJAMIN A.**
41 Main St., New Rochelle, N. Y.
D.V.M., New York State Veterinary College, 1941.
Voucher: J. S. Halat.
- LUEDTKE, RICHARD P.**
907 West Fourth St., Dixon, Ill.
D.V.M., Iowa State College, 1945.
Voucher: A. G. Misener.
- MCLURE, FRED K.**
310 South Chestnut St., Clarksburg, W. Va.
D.V.M., George Washington University, 1912.
Voucher: J. P. Bailey.
- MARTIN, JOHN H.**
105 West Third St., North Manchester, Ind.
D.V.M., Michigan State College, 1938.
Voucher: W. W. Garverick.
- MILO, HOWARD A.**
1228 Biltmore Ave., Pittsburgh 16, Pa.
V.M.D., University of Pennsylvania, 1916.
Voucher: Raymond C. Snyder.
- MOLINE, ERNEST N.**
2051 E. Forest Dr., Tallahassee, Fla.
D.V.S., Kansas City Veterinary College, 1911.
Voucher: V. L. Bruns.
- PRIOR, ROGER W.**
Shelburne Road, Burlington, Vt.
D.V.M., School of Veterinary Medicine of Quebec, 1950.
Voucher: S. D. Merrill.
- PHILLIPSON, MURRAY H.**
1720 S. Main St., Las Vegas, Nev.
D.V.M., Ontario Veterinary College, 1949.
Voucher: Edward Records.
- RICKS, DANIEL H.**
State Board of Agriculture, Capitol Bldg., Oklahoma City, Okla.
D.V.M., Alabama Polytechnic Institute, 1931.
Voucher: Lewis H. Moe.
- RINDELL, ARTHUR M.**
297 Central Ave., Rochester 5, N.Y.
D.V.M., New York State Veterinary College, 1927.
Voucher: J. J. Regan.
- SANCHEZ-ESCOTO, FEDERICO**
Avenida 12 esquina a Calle 11, Ampliacion de Almendares, Mariana, Cuba.
D.V.M., University of Havana, 1938.
Voucher: Angel M. Morales.
- SMITH, IVAN**
Edgar, Wis.
D.V.M., St. Joseph Veterinary College, 1921.
Voucher: B. A. Beach.
- SPEAKER, R. T.**
Keota, Iowa.
D.V.M., Iowa State College, 1950.
Voucher: F. B. Young.
- TRENCHI, HEBERT**
School of Veterinary Medicine, Cornell University, Ithaca, N. Y.
Veterinary School of Montevideo, Uruguay, 1944.
Vouchers: P. P. Levine and A. V. Machado.
- TURNER, JOHN EDGAR**
Box 675, Gainesville, Ga.
D.V.M., Alabama Polytechnic Institute, 1949.
Voucher: L. T. Hopkins.
- WASHBURN, GLENN ALLEN**
5035 ASU, VFIS, Ft. Benjamin Harrison, Ind.
D.V.M., Ohio State University, 1944.
Vouchers: Neil O. Wilson and W. A. Nusser.
- WHITCOMB, OLIVER W.**
535 Welch Ave., Ames, Iowa.
D.V.M., Iowa State College, 1949.
Voucher: F. B. Young.
- WITTER, WAYNE R.**
2660 Duke St., Alexandria, Va.
D.V.M., Kansas State College, 1938.
Voucher: W. L. Benda.
- WYKOFF, MATTHEW H.**
1605th Med. Sq. APO 406, c/o P.M., New York, N.Y.
D.V.M., Iowa State College, 1946.
Vouchers: Norton A. Orr and Jose L. Armas.
- YOUNG, COLE J., JR.**
131 Lee St., Decatur, Ala.
D.V.M., Alabama Polytechnic Institute, 1944.
Voucher: I. S. McAdory.
- Second Listing**
- BATORY, C. F.**, 1119 East King St., Lancaster, Pa.
- BECHER, RALPH J.**, 1109 West 5th Ave., Columbus 12, Ohio.
- CONNER, ROBERT F.**, Veterinary Hospital, Jasper, Ala.
- FOURNIER, RICHARD O.**, R.F.D. 2, Providence Pike, Woonsocket, R.I.
- GOEN, OLIVER F.**, 1908 N.W. 2nd St., Gainesville, Fla.
- GORIS, JAMES W.**, 1 The Spur, Syosset, L.I., N.Y.
- KLINE, R. E.**, Melbourne, Iowa.
- LEATHERS, JOSEPH A.**, Milaca, Minn.
- MISHKIN, HOWARD H.**, 6744 East End Ave., Chicago 49, Ill.
- OLDSEN, JOHN P.**, Rockford, Iowa.
- PARKER, S. HERMAN**, 4641 Woodlawn Ave., Chicago 15, Ill.
- RICHMAN, HERBERT**, Box 683, Murfreesboro, Tenn.
- SCOTT, ROGER C.**, 1222 Robinson St., Knoxville, Iowa.

- SELGA, ISHMAEL S., Tubao, La Union, Philippines.
 SHIFFMAN, MORRIS A., 1032 East Knapp St., Milwaukee, Wis.
 •SMITH, MARVIN M., R.R. 5, Springfield, Tenn.
 STALLINGS, EARL P., 3631 Westheimer, Houston 6, Texas.
 TRUDEL, LIONEL A., 290 Woodbury Ave., Portsmouth, N. H.

1951 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Kansas State College*

All of the following applicants, with the exception of those otherwise noted, were vouched for by Drs. E. J. Frick and E. E. Leasure.

- BEAM, FRANCIS MAX, D.V.M.
 1323 Laramie, Manhattan, Kan.
 BILLINGSLEY, LESLIE, D.V.M.
 609 Cornell Ave., Kansas City, Kan.
 BRECKENHAUER, WILLIAM H., D.V.M.
 1329 Anderson Ave., Manhattan, Kan.
 BERCHEM, JULIUS W., D.V.M.
 Middle Ave., San Martin, Calif.
 BOLEY, WILLIAM S., D.V.M.
 Harveyville, Kan.
 BOYD, RICHARD A., D.V.M.
 Sarcoxie, Mo.
 BRADBURY, GEORGE, JR., D.V.M.
 Highway 69, Excelsior Springs, Mo.
 BRUGGER, RAYMOND J., D.V.M.
 7708 Jarboe, Kansas City, Mo.
 BUNYAN, GERALD W., D.V.M.
 Moline, Kan.
 BURGIN, WILLIS H., SR., D.V.M.
 Veterinary Division, Kansas State College,
 Manhattan, Kan.
 CARLETON, THOMAS J., D.V.M.
 318 Laurel Ave., Palo Alto, Calif.
 CARLSON, EDMUND M., D.V.M.
 1114 Bluemont, Manhattan, Kan.
 Vouchers: N. C. Gustafson and E. J. Frick.
 CHESNUT, JUDI A., D.V.M.
 Mulberry, Kan.
 COLLINGE, IRWIN J., D.V.M.
 Route 1, Carbondale, Kan.
 COUK, RAYMOND A., JR., D.V.M.
 Cedar Vale, Kan.
 DEPUY, PHILIP L., D.V.M.
 400 Garden St., Peoria 6, Ill.

- DOUGLASS, CLIFTON S., JR., D.V.M.
 Rt. 8, Box 153, Little Rock, Ark.
 Vouchers: E. J. Frick and E. A. Rhode.
 DUBIN, ROBERT E., D.V.M.
 LaCrosse, Kan.
 DUDLEY, CHARLES M., D.V.M.
 Moscow, Kan.
 EVANS, LAWRENCE E., D.V.M.
 Veterinary Division, Kansas State College,
 Manhattan, Kan.
 GRENE, WILLIAM B., D.V.M.
 104 South Walnut, Warren, Ark.
 HALL, CHARLES F., D.V.M.
 340 North 16th, Manhattan, Kan.
 HART, JOHN W., D.V.M.
 Conway, Ark.
 HERRICK, DAVID E., D.V.M.
 R.R. #2, Meriden, Kan.
 HILL, RAYMOND O., D.V.M.
 West DePere, Wis.
 HINTON, JOHN P., D.V.M.
 Springfield, Minn.
 HODGSON, ROBERT L., D.V.M.
 Rt. 1, Manhattan, Kan.
 Vouchers: E. J. Frick and J. E. Mosier.
 HOLMES, HARVEY, D.V.M.
 1212 Plainfield Road, Joliet, Ill.
 HUDELSOHN, JOHN F., D.V.M.
 Pomona, Kan.
 HUNTER, CHARLES C., D.V.M.
 3849 Everest St., Arlington, Calif.
 JACKSON, DONALD E., D.V.M.
 624 Garfield Ave., Kansas City, Kan.
 JARED, MARVIN B., D.V.M.
 R.R., Anadarko, Okla.
 JEWELL, JAMES S., D.V.M.
 Lone Tree, Iowa.
 KELSEY, OREN L., JR., D.V.M.
 Rt. 5, Box 290, Kansas City, Kan.
 KIGER, DARRELL G., D.V.M.
 325 North Ohio, El Dorado, Kan.
 KING, KEITH R., D.V.M.
 527 South Broadway, Salina, Kan.
 KINYOUN, DALE E., D.V.M.
 Formoso, Kan.
 LENZ, CARL R., D.V.M.
 1431 Pierre, Manhattan, Kan.
 LEWIS, CLOYD D., D.V.M.
 Amarillo Veterinary Clinic, Box 1226, Amarillo,
 Texas.
 LIEBL, ELWYN A., D.V.M.
 Spearville, Kan.
 LONG, TYSON T., D.V.M.
 1215 Pierre, Manhattan, Kan.
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- BOE, NORRIS, D.V.M.**
Rt. 3, Pullman, Wash.
Vouchers: H. E. Adler and J. S. Dunlap.
- BONALLO, HARRY B., D.V.M.**
Rt. 2, Coeur d'Alene, Idaho.
Vouchers: J. A. McCurdy and G. H. Conner.
- BRINKMAN, DAVID C., D.V.M.**
Bayview Veterinary Hospital, Rt. 2, Box 759,
Bremerton, Wash.
Vouchers: J. A. McCurdy and H. E. Adler.
- BROZ, HERBERT A., D.V.M.**
702 Avenue D, Billings, Mont.
Vouchers: H. E. Adler and J. A. McCurdy.
- CHILDS, CHARLES E., D.V.M.**
159 Palm Ave., Highland, Calif.
Vouchers: R. L. Ott and J. A. McCurdy.
- DeJONG, DENNIS H., D.V.M.**
Box 454, Lynden, Wash.
Vouchers: R. L. Ott and G. H. Conner.
- DOST, FRANK N., D.V.M.**
Box 372, Harper, Wash.
Vouchers: G. H. Keown and G. H. Conner.
- ELLWANGER, DONALD E., D.V.M.**
Clinton, Wash.
Vouchers: J. A. McCurdy and G. H. Conner.
- FISHBACK, MALCOLM E., D.V.M.**
1919 North Tyler, Tacoma, Wash.
Vouchers: E. C. Stone and P. A. Klavano.
- FOLLETT, NEIL V., D.V.M.**
1234 Maiden Lane, Pullman, Wash.
Vouchers: G. H. Conner and R. L. Ott.
- FRANK, FLOYD W., D.V.M.**
701 Church St., Pullman, Wash.
Vouchers: H. E. Adler and W. M. Dickson.
- GANSBERG, CLARENCE F., D.V.M.**
Klamath Animal Hospital, Klamath Falls, Ore.
Vouchers: H. E. Adler and W. M. Dickson.
- GOULTER, ALLEN J., Jr., D.V.M.**
Ilwaco, Wash.
Vouchers: H. E. Adler and E. C. Stone.
- HANCUS, ROBERT A., D.V.M.**
17899 40th N.E., Seattle 55, Wash.
Vouchers: G. H. Conner and R. L. Ott.
- HARTE, DWIGHT C., D.V.M.**
18 East Fifth, Tempe, Ariz.
Vouchers: E. C. Stone and H. E. Adler.
- HYMAS, THEO. A., D.V.M.**
Rt. 1, Box 335, Tooele, Utah.
Vouchers: R. L. Ott and G. H. Conner.
- ISBELLE, HARRY C., D.V.M.**
2037 National Ave., San Diego 1, Calif.
Vouchers: H. E. Adler and G. H. Keown.
- JOHNSON, DAVID W., D.V.M.**
Box 63, Davenport, Wash.
Vouchers: H. E. Adler and R. L. Ott.
- KERSHAW, HYRUM W., D.V.M.**
127 East 2nd North St., Rigby, Idaho.
Vouchers: J. E. McCoy and E. C. Stone.
- LEWIS, JAMES W., D.V.M.**
Bannock Animal Hospital, Rt. 2, North,
Pocatello, Idaho.
Vouchers: R. L. Ott and J. A. McCurdy.
- LUCAS, JAMES R., Jr., D.V.M.**
1227 Powers Ave., Lewiston Orchards, Lewis-
ton, Idaho.
Vouchers: G. H. Conner and G. H. Keown.
- MARBLE, DONALD W., D.V.M.**
P.O. Box 613 College Station, Pullman, Wash.
Vouchers: H. E. Adler and P. A. Klavano.
- MASON, CLARENCE G., D.V.M.**
Rt. 2, Ellensburg, Wash.
Vouchers: R. L. Ott and G. H. Conner.
- McGOUGH, STANLEY E., D.V.M.**
117 North Tacoma Ave., Tacoma 3, Wash.
Vouchers: R. L. Ott and E. C. Stone.
- MOORE, EARL W., D.V.M.**
841 N.E. Broadway, Portland, Ore.
Vouchers: R. L. Ott and E. C. Stone.

MORGAN, PHILIP R., D.V.M.

Enterprise, Ore.

Vouchers: P. A. Klavano and E. C. Stone.

OHLSON, THOMAS W., D.V.M.

3006 Sylvan Ave., Oakland, Calif.

Vouchers: G. H. Keown and G. H. Conner.

PRENTICE, MARVIN M., D.V.M.

400 Colorado St., Pullman, Wash.

Vouchers: E. E. Wegner and G. H. Conner.

PRIEDE, JACK E., D.V.M.

7601 S. 135 Ave., Seattle 88, Wash.

Vouchers: G. H. Conner and R. L. Ott.

PRIOR, ROBERT L., D.V.M.

Box 602, Prosser, Wash.

Vouchers: R. L. Ott and P. A. Klavano.

REED, RAYMOND E., D.V.M.

1018 E. 4th St., McMinnville, Ore.

Vouchers: J. A. McCurdy and R. A. Kainer.

RIGHTMIRE, WALLACE G., D.V.M.

Snohomish, Wash.

Vouchers: R. L. Ott and R. A. Kainer.

SANDBERG, DOUGLAS L., D.V.M.

1104 East Main, Puyallup, Wash.

Vouchers: G. H. Conner and H. E. Adler.

SLATER, ARNOLD CLYDE, D.V.M.

Rt. 1, Box 381, Spanaway, Wash.

Vouchers: P. A. Klavano and R. L. Ott.

SPRINKER, LUCAS H., D.V.M.

1188 Hardcastle, Woodburn, Ore.

Vouchers: P. A. Klavano and E. C. Stone.

STRANDBERG, RUSSEL V., D.V.M.

Pacific Veterinary Hospital, 2430 Meridian St., Bellingham 21, Wash.

Vouchers: E. E. Wegner and H. E. Adler.

SWANSON, ORIN G., D.V.M.

Rt. 6, Box 500, Vancouver, Wash.

Vouchers: R. L. Ott and G. H. Conner.

UGSTAD, GEORGE O., D.V.M.

810 West "B" St., Grants Pass, Ore.

Vouchers: G. H. Conner and H. E. Adler.

VETTER, DONALD R., D.V.M.

Rt. 2, Raymond, Wash.

Vouchers: J. A. McCurdy and R. L. Ott.

WARD, VERNON, D.V.M.

RFD 1, Mabton, Wash.

Vouchers: R. L. Ott and P. A. Klavano.

U. S. GOVERNMENT

Dr. Noyes Co-Director of Foot-and-Mouth Disease Campaign.—Secretary of Agriculture Brannan has announced the appointment of Dr. L. R. Noyes as co-director of the Joint Mexican-United States Commission for the Eradication of Foot-and-Mouth Disease, effective May 1, 1951. He moves up from the post of associate co-director and succeeds Mr. Harry H. Johnson, who resigned to return to private industry.

Prior to assignment in Mexico, Dr. Noyes was assistant veterinarian in charge of field activities for the BAI in Fort Worth, Texas.

Veterinarians Receive Service Awards.

Three veterinarians were among those honored with service awards in the annual USDA ceremonies on May 15.

Dr. S. O. Fladness, assistant chief of the BAI, was one of the six receiving distinguished service awards and Drs. W. M. Mohler and C. D. Lowe received superior service awards. The citations follow.

Dr. Severin O. Fladness, Bureau of Animal Industry, Washington, D.C.

For inspirational leadership in planning and directing livestock disease control and eradication functions of the Bureau of Animal Industry, which has added immeasurably to the nation's economy and the Department's prestige in this country and abroad.

Dr. William M. Mohler, Bureau of Animal Industry, Washington, D.C. (Pa.)

For his work in developing a serological test for the detection of carriers of anaplasmosis.

Dr. Clifton D. Lowe, Extension Service, Washington, D.C. (Ohio)

For his ability and leadership in fostering and developing a friendly, workable relationship between the veterinary profession and educational institutions; for pioneering practical, healthy, adequate meat production as the goal of all members of the livestock industry.

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Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry are reported as of May 11, 1951.

NEW APPOINTMENTS

Jean N. Archer, Des Moines, Iowa

Donald L. Croghan, St. Joseph, Mo.

David Eisenberg, New York, N. Y.

John C. Fletcher, Phoenix, Ariz.

Thomas W. Lyles, Fort Worth, Texas

William F. McKellar, Springfield, Mass.

Paul R. Sell, Allentown, Pa.

Floyd M. Ward, Fort Worth, Texas

Frederick J. Weitz, Buffalo, N. Y.

RESIGNATIONS

Philip D. Cazier, Topeka, Kan.

Joseph Diugach, New York, N. Y.

Montgomery L. Houston, Madison, Wis.

Robert F. Locke, Washington, D. C.

J. Kenneth Marriott, Sioux City, Iowa

J. Sidney Michum, Des Moines, Iowa

W. H. Patton, Jr., Madison, Wis.

Richard A. Ripley, Madison, Wis.

Aubrey G. Robinson, Jackson, Miss.

Varley F. Young, Des Moines, Iowa

SEPARATIONS

Bernhard L. Werner, Los Angeles, Calif.

David Eisenberg, Mexico City, Mex. (military service)

RETIREMENTS

Stanley C. Cook, Cincinnati, Ohio

Charles R. Phillips, Indianapolis, Ind.

Richard P. Salisbury, Cleveland, Ohio

Leland J. Sears, Pierre, S. Dak.

TRANSFERS

Gerardo Arroyo, from San Juan, P.R., to Indianapolis, Ind.
 Ralph L. Bishop, from St. Paul, Minn., to Wichita, Kan.
 John M. Brand, from Olympia, Wash., to Ogdensburg, N. Y.
 Granville W. Breed, from Atlanta, Ga., to Augusta, Maine.
 Harold C. Caudle, from Mexico City, Mex., to Sacramento, Calif.
 James R. Collier, from Davenport, Iowa, to Chicago, Ill.
 John R. Corcoran, from Lincoln, Neb., to Helena, Mont.
 Salem G. Fine, from Augusta, Maine, to Oklahoma City, Okla.
 Howard B. Fishback, from Erie, Pa., to Buffalo, N. Y.
 Orville J. Halverson, from Olympia, Wash., to Salt Lake City, Utah.
 Ernest V. Maginnis, from Oklahoma City, Okla., to El Paso, Texas.
 Fred J. Major, from Mexico City, Mexico, to San Antonio, Texas.
 William J. Minor, from South St. Paul, Minn., to Waterloo, Iowa.
 M. LeRoy Sweigard, from Allentown, Pa., to Scranton, Pa.

MILITARY FURLoughS

Donald C. Houk, Des Moines, Iowa
 John E. Johnson, Nashville, Tenn.
 Roy J. Milleret, Jefferson City, Mo.
 Richard B. Myers, Oklahoma City, Okla.

DEATHS

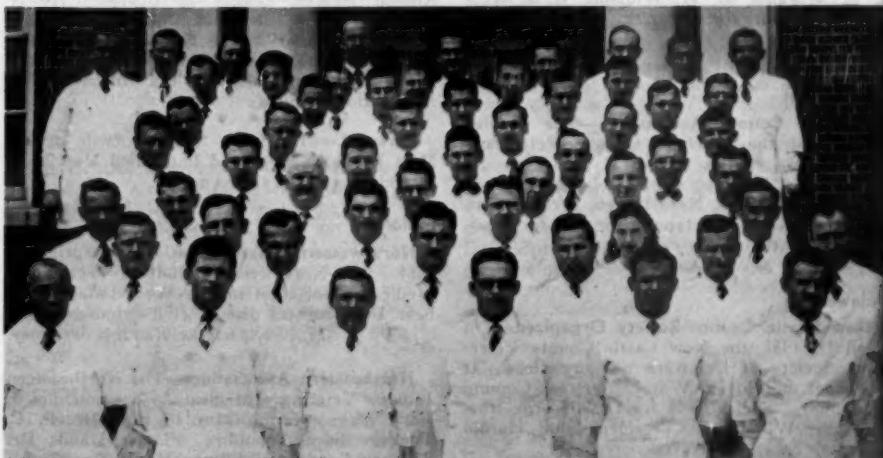
Ralph Kolo, Chicago, Ill.
 DeWitt LaGrange, Ogdensburg, N. Y.
 Carl C. Taylor, Pittsburgh, Pa.

AMONG THE STATES AND PROVINCES

Alabama

Conference for Veterinarians.—The twenty-seventh annual conference for veterinarians at the Alabama Polytechnic Institute School of Veterinary Medicine was held June 7-9, 1951. Visiting lecturers were Drs. C. W. Barber, Georgia Poultry Laboratory, Gainesville; S. E. Burnette, Evergreen Chinchilla Ranch, Columbus, Ga.; A. G. Danks, New York State Vet-

Graduating Class, School of Veterinary Medicine, Alabama Polytechnic Institute



Front row (left to right)—James Neal, Angus Gaskin, Joe Veazey, Robert Smith, Harry McAbee, William T. Boozer.
 Second row—Charles Ogletree, J. H. Chambliss, Basil A. Jones, Robert V. Boone, Bobby A. Chancellor, J. L. Holmes, Jennings Bozeman.
 Third row—Harrell Jossey, George Washington, W. L. Boone, Jr., Thomas Simms, Jr., Curtis Fincher, Harold Sherman.
 Fourth row—George Max Autrey, W. R. Lester, Jr., Thomas Calvin, John Watt, Roy Hock, Eugene Saffen, George Bullock, D. H. McRae, Roy Hollingsworth, Raeford Deal, Allen Standifer.
 Fifth row—George Bradshaw, Kyle Hunter, Lewis Puckett, Adam Brunton, J. W. Conaway, Ray Ward.
 Sixth row—Uncas T. Crocker, Theodore Gail, Alfred Creswell, Maxwell Maughon, Amos Dillard, Daniel Griswold, Worth Lanier, Charles Persall, Jay Hamilton, Douglas Harris, Jr., Earl Monroe Jones, J. W. Dantzler, Charles Otto.
 Seventh row—J. R. Langford, W. R. York, Everett Wells, Fort Sutton, H. L. Thompson, Ross Cryer, Ralph Hamilton, LaVanus Sanders.
 Those not present when picture was taken—John R. Gates, Ed Miner, Jr., R. G. Niver, Matthew Wiggins.

erinary College, Ithaca; **E. R. Frank**, School of Veterinary Medicine, Kansas State College, Manhattan; **U. D. Franklin**, State Health Department, Montgomery; **E. J. Frick**, School of Veterinary Medicine, Kansas State College; **Morris A. Gordon** (Ph.D.), U. S. Public Health Service, Chamblee, Ga.; **M. K. Heath**, Birmingham; **I. A. Lucas**, U. S. BAI, Moultrie, Ga.; **C. K. Mingle**, U. S. BAI, Washington, D.C.; **R. D. Radeff**, BAI, Kerrville, Texas; **Virgil B. Robinson**, Vanderbilt University School of Medicine, Nashville, Tenn.; **James H. Steele**, U. S. Public Health Service, Atlanta, Ga.; **Frank Thorp, Jr.**, School of Veterinary Medicine, Michigan State College, East Lansing; and **Asa Winters**, U. S. BAI, Washington, D.C.

Members of the veterinary faculty who participated in the program were Drs. **W. S. Bailey**, **F. A. Clark**, **N. D. Connor**, **T. C. Fitzgerald**, **D. S. Folse**, **W. J. Gibbons**, **J. E. Greene**, **M. E. Hall**, **B. F. Hoerlein**, **J. F. Hokanson**, **W. N. Konde**, **A. A. Leibold**, **L. O. Llewellyn**, **F. H. Manley**, **W. P. Monroe**, **I. S. McAdory**, **J. A. McBee**, **P. M. Newberne**, **C. S. Roberts**, **J. A. Schmitz**, **E. V. Stromlund**, **R. S. Sugg**, **A. M. Wiggins**, **M. W. Williams**, **E. S. Winters**, Miss Margaret Schmitz, and Mr. **H. T. Wingate**.

s/R. S. SUGG, Dean.

Connecticut

Fairfield County Association.—The regular meeting of the Fairfield County Veterinary Medical Association was held on April 11, 1951, at the Chimney Corners Inn, Stamford. Dr. Joseph DeVita, New Haven, presented an excellent talk on new type of pinning for coxo-femoral luxation.

s/WILLIAM R. LEGGETT, Secretary.

Delaware

New Castle County Society Organized.—On April 11, 1951, the New Castle County Veterinary Society of Delaware was organized. It will meet monthly in Wilmington (see Coming Meetings). The officers are Drs. George Rosenthaler, Wilmington, president; and Harold Roberts, Newark, secretary-treasurer.

s/HAROLD ROBERTS, Secretary.

District of Columbia

District Association.—The District of Columbia Veterinary Medical Association met in the Mayflower Hotel on April 18. Program speakers, all members of the Bureau of Animal Industry, were Drs. John T. Luckner, Charles G. Durbin, Frank D. Enzie, H. R. Seibold, and G. Dikmans.

s/CLARENCE H. THOMPSON, JR., Secretary.

Illinois

Chicago Association.—Three Veterinary

Corps officers, led by Col. **E. W. Young**, discussed the Veterinary Corps and its relationship to the Quarter-Master Corps at the May 8 meeting of the Chicago Veterinary Medical Association.

s/ROBERT C. GLOVER, Secretary.

Dr. Young Honored at Humane Conference.—The annual Midwest Humane Conference, with delegates from 9 states, was held May 18, 1951, at Union Stock Yards, Chicago, with a dinner meeting at the Saddle and Sirloin Club.

A general meeting was held the following day at the Anti-Cruelty Society, with Mr. Thomas Justice of the Columbus, Ohio, humane society, as chairman.

At the dinner meeting, the *Dog World Magazine* Award for outstanding service to dogs was presented to Dr. W. A. Young, general manager of the Chicago Anti-Cruelty Society, in recognition of his many years of constructive interest in the field of dog breeding, showing, and better dog care.

One of the nation's outstanding humane workers, Dr. Young came to the Anti-Cruelty Society in 1936 after eleven years with the Animal Rescue League in Boston. He is secretary of the Livestock Conservation, Inc., honorary director of the National Dog Week Association, treasurer of the AVMA, and was for ten years president of the American Cat Association.

Personal.—Mrs. Orba S. Skala (wife of Dr. Matt J. Skala), Highland Park, died May 22 as a result of a fall at their home.

Indiana

Northwestern Association.—On April 24, 1951, the Northwestern Indiana Veterinary Medical Association met in West Lafayette to hear Dr. Brothers discuss civil defense.

s/J. L. KIXMILLER, Resident Secretary.

Northeastern Association.—The Northeastern Indiana Veterinary Medical Association met in Fort Wayne during May to hear Dr. F. C. Tucker discuss poultry diseases and Dr. Thomas Snodgrass, Pitman-Moore Co., Zionsville, speak on infectious canine hepatitis.

s/J. L. KIXMILLER, Resident Secretary.

Tenth District Association.—The Tenth District (Ind.) Veterinary Medical Association met east of Glenwood on May 17, 1951. Members participated in a round-table discussion of current problems.

s/J. L. KIXMILLER, Resident Secretary.

Iowa

Cedar Valley Clinic.—The annual spring clinic of the Eastern Iowa Veterinary Association,

sponsored by the Cedar Valley Veterinary Association, was held at the Dairy Cattle Congress Hippodrome in Waterloo on May 15.

Among the outstanding features of an interesting and educational program were specimens showing various stages of pregnancy and pathological conditions resulting in sterility supplied by Dr. John Herrick, Ames; diagnosis and discussion of various poultry diseases by Dr. C. D. Lee, Ames; demonstration of a cattle chute designed for practitioner use by Dr. H. B. Henderson, Reinbeck; and a demonstration of vena cava bleeding. A panel of diagnostic consultants examined postmortem cases and answered questions on various practitioner problems, and a section on handy devices brought the practitioner up-to-date on the latest labor-saving devices of the profession.

The program, divided into eight sections—bovine, avian, equine, swine, ovine, committee on restraint, diagnostic consultants, and handy devices—was designed for complete and efficient coverage of professional problems and latest developments for the busy practitioner.

s/F. E. BRUTSMAN, Secretary.

* * *

Dr. Biester Heads National Committee.—Dr. H. E. Biester, associate director of the veterinary research institute at Iowa State College, has been appointed chairman of the Committee on Biologics and Pharmaceuticals of the U. S. Livestock Sanitary Association.

Kansas

Dr. Crispell Appointed to Health Board.—Dr. Tom P. Crispell (CVC'20), Parsons, was appointed by Governor Arn to the new ten-member State Board of Health on April 30, 1951. The new board is composed of five medical doctors, a hospital administrator, a veterinarian, a dentist, a sanitary engineer, and a pharmacist. Membership in the outgoing board was confined to nine physicians and a lawyer.

s/A. H. QUIN.

Michigan

Personal.—Dr. James R. Young (MSC '50) was an assistant to Dr. C. W. Montgomery in Cincinnati, Ohio, until February 1, 1951. Shortly thereafter, he started a small animal practice and hospital in Battle Creek, Mich.

Minnesota

State Society.—The following officers were elected for the ensuing year at the annual meeting of the Minnesota State Veterinary Medical Society in St. Paul Jan. 31-Feb. 2, 1951: Drs. W. L. Flanary, St. Charles, president; G. A. Larson, Breckenridge, president-elect; B. S. Pomeroy, St. Paul, secretary-treasurer. New Board members are Drs. E. G. Hughes, Sleepy

Eye, first vice-president; and D. H. Spangler, Atwater, second vice-president. Dr. L. T. Christensen, Hancock, was elected to the Board of Trustees.

Drs. C. E. Cotton, Prescott, Wis., and C. G. Jennings, Morris, were elected to honorary



Left to right—Three of the distinguished members, Drs. C. A. Mack, C. A. Nelson, and D. R. Philip, elected at the annual meeting of the Minnesota state society.

membership. The following were elected as distinguished members: Drs. C. A. Mack, St. Paul; C. A. Nelson, Brainerd; D. R. Philip, Mankato; C. P. Soneral, Lindstrom; W. E. Day, St. Paul; and P. H. Casey, Minneapolis.

s/HENRY J. GRIFFITHS, Resident Secretary.

* * *

Twin City Society.—On April 26, 1951, the Twin City Veterinary Medical Society met at University Farm to hear Drs. Rue Jensen, Fort Collins, Colo., and Wm. Pritchard, St. Paul, discuss trichloro-meal poisoning in cattle; and Dr. Henry Griffiths, St. Paul, tell of the use of some of the newer parasiticides in large and small animals. Forty members and guests attended this meeting.

s/HENRY J. GRIFFITHS, Resident Secretary.

Missouri

Kansas City Association.—On May 15, the Kansas City Veterinary Medical Association met at the Hotel Continental to hear Dr. Ray D. Hatch, University of Illinois, discuss calf diseases and to see the film "The Triple Threat of Brucellosis."

s/K. M. CURTS, Secretary.

Nebraska

"Big Five" Slaughtered at Omaha Stockyards.—United States, England, France, China, and Russia went to slaughter together on May 7, 1951. Reason: They had outlived their usefulness and were too big and fat to stay in the world any longer.

And so ended the spectacular careers of 5

cattle that made history as the only bovine quintuplets ever reported to attain maturity.

Even in death, the 4 brothers and 1 sister (France) kept up a spectacular front by tipping the scales at an unchallenged average for a mixed shipment of fat cattle at the Omaha stockyards. England weighed in heaviest: 2,145 lb. France was lightest: 1,680 lb. Together, the five averaged 1,979 lb. and brought an average of \$692.65 per head or a selling price of \$35.00 per hundred pounds.

Veterinarian L. J. Smith of Fairbury, Neb., attended their birth on Nov. 20, 1945, at the farm of Leo Schmoldt. Dr. Smith had a 40 per cent interest in them at first, according to the *Omaha Daily Journal-Stockman*, and later acquired full ownership. Then he put them on a tour of the country that made them one of the outstanding attractions of the livestock expositions. Of Polled Hereford-Polled Shorthorn parentage, they were established as authentic quintuplets by blood-typing.

When the economics of animal production finally overruled sentiment, and the 5 were started to the stockyards, Dr. Smith took a quizzical look at Russia. The quints and the United Nations came into being the same year, but things had changed a lot since then.

New Hampshire

State Association.—At the April 26, 1951, meeting of the New Hampshire Veterinary Medical Association in Bedford, Dr. Gerry B. Schnelle, of the Angell Memorial Animal Hospital in Boston, discussed "Canine Distemper and Associated Diseases." New members admitted to the Association at this meeting were Drs. Wm. Robert Dunlap, Durham; Richard Hill, Littleton; and Frederick Fillmore, Laconia.

The following officers will serve for the ensuing year: Drs. Forest Tenney, Peterboro, president; Carl L. Martin, Rochester, vice-president; and Fred E. Allen, Durham, secretary-treasurer.

s/CARL L. MARTIN, Resident Secretary.

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held at the New York Academy of Sciences, on May 9, 1951. Dr. Frantisek Kral, School of Veterinary Medicine, University of Pennsylvania, presented a paper on dermatitis, eczema, and otitis in small animals, and Dr. John E. Crawford, historian, presented a report on the history of the Association from its founding in 1894 to 1916.

The special occasion of the meeting was the presentation of certificates to "old timers" in the Association by President Altman. The following men received certificates following

the reading of their biographies: Drs. Edwin B. Ackerman, Robert S. MacKellar, Sr., H. K. Miller, James E. Assing, Herbert L. Cox, Ray W. Gannett, Clarence E. Shaw, Samuel Appleby, George Watson Little, Bruce Blair, Edwin R. Blamey, Harry Tiehurst, and Charles H. Higgins. Recipients of certificates who were unable to be present were Drs. Adolph Eichhorn, George G. Anderson, J. Elliott Crawford, and Charles D. Pearce.

Dr. A. L. Brown, president of the New York State Veterinary Medical Society, addressed the Association.

s/C. R. SCHROEDER, Secretary.

* * *

Dr. Mills Joins Staff of Milling Company.—Dr. Adrian M. Mills (COR '20) has joined the dairy research staff of the Maritime Milling Co., Buffalo, as consulting veterinarian. Dr. Mills' work will be in areas where nutrition and veterinary medicine are closely allied.

Nova Scotia

Provincial Association.—The Nova Scotia Veterinary Association met in Truro on April 18, 1951, for a business session. The following officers were elected for the ensuing year: Drs. J. H. Scott, Port Williams, president; J. E. MacLean, Halifax, vice-president; R. McG. Archibald, Truro, secretary-treasurer; and H. A. Carruthers, Antigonish, and C. B. Sims, Paradise, directors.

s/R. McG. ARCHIBALD, Resident Secretary.

Ohio

Conference for Veterinarians.—The twentieth annual conference for veterinarians sponsored by the College of Veterinary Medicine, the Ohio State University, and the Robert Gould Research Foundation, Inc., was held June 13-15, 1951, on the campus.

Guest speakers were Drs. J. A. Baker, New York State Veterinary College; C. D. Barrett, Akron; D. S. Bell, Ohio Agricultural Experiment Station; T. W. Craver, Youngstown; Curtis C. Cromley, Ashville; H. G. Geyer, chief, Division of Animal Industry, Ohio Department of Agriculture; Kenneth B. Haas (Ph.D.), Loyola University, Chicago; F. W. Hill, Cornell University; E. G. Howes, Columbia University, New York City; H. E. Jensen, Cleveland; W. O. Keefer, Springfield; W. O. Kester (Colonel, Veterinary Division, U.S.A.F.); E. P. Leonard, New York State Veterinary College; R. W. Luecke, Michigan State College, East Lansing; C. W. Montgomery, Cincinnati; Mark L. Morris, Topeka, Kan.; H. B. Roberts, Cleveland; Irwin H. Roberts, South Dakota Bureau of Animal Industry, Brookings; P. A. Soldner, Springfield; E. W. Tucker, New York State Veterinary College; D. J. Wade, Lancaster; and J. A. Winkler, Cold Springs, Ky.

Faculty members of the Ohio State Univer-

sity who spoke on the program were Drs. Harold Amstutz, E. J. Catcott; C. R. Cole; L. C. Ferguson; J. H. Helwig; Leroy Johnson; F. J. Lingma; F. R. Koutz; H. M. Mauger; J. L. Morton; D. D. Moyer; J. C. Ramge; R. L. Rudy; T. S. Sutton; V. L. Tharp; and W. G. Venzke.

Oregon

State Association.—The Oregon State Veterinary Medical Association met in Eugene on April 21, 1951. Principal speakers on the program were Dr. Henry Adler, Washington State College, "Kidney dysfunctions of the Dog and Laboratory Procedures that Apply" and Dr. Gabel Conner, Washington State College, "The Use of Anavenol in Large Animal Surgery."

An interesting afternoon of clinical demonstrations, put on by the Eugene members, included anesthetics and surgical techniques for large and small animals, ovarioectomy on cats, drawing blood for transfusions, and administration of fluids and medicine. The Executive Board passed a resolution urging that hog cholera be attacked on a national scale, decided to function as the committee on ethics for this association, and discussed plans to limit attendance at future meetings to members in good standing, unless an invitation has been issued.

New officers of the association are Drs. Clifford Bjork, Portland, president; Carl Howarth, St. Helens, vice-president; and Edward C. Holden, Oswego, secretary-treasurer. New Executive Board members are Drs. L. G. Soderholm, Hillsboro; F. G. Rankin, Salem; S. E. Davis, McMinnville; and E. L. Henkel, Silverton.

s/Roy H. PETERSON, Resident Secretary.

Pennsylvania

Keystone Association.—Dr. John T. McGrath, University of Pennsylvania School of Veterinary Medicine, discussed disturbances of locomotion in dogs due to spinal disease, at the May 23 meeting of the Keystone Veterinary Medical Association.

s/RAYMOND C. SNYDER, Secretary.

* * *

Court Rules Against Martin Laboratories.—The Martin Laboratories, of West Chester, Pa., recently lost a hard-fought suit through which it had sought to prevent infringement of its patent on antibiotic bougies marketed as "mastics."

Main target of the suit was Wyeth, Inc., which has been engaged in vigorous over-the-counter promotion of a product (penstix) similar to that on which Dr. Martin had asked the court to uphold his inventor and patent rights. A decision in favor of Dr. Martin would have opened the way for action against other companies, besides Wyeth, that have entered the mastitis bougie field.

In arguments extending beyond inventor and patent rights, the Martin organization sought to emphasize dangers to livestock and human health when drugs such as bougies are used without diagnosis and guidance by a veterinarian. The Martin complaint also charged that indiscriminate merchandising of imitation products, and unsatisfactory results obtained in some cases where such imitation products were used, had lowered the prestige and acceptance of his own product.

According to a recent letter from Dr. Martin, the Baltimore (Md.) court where the case was heard ruled that "the patent was no doubt infringed but there was not sufficient evidence of invention for the court to sustain the patent." In a 22-page decision, the court also ruled that the Martin Laboratories had failed to show harm to the dairy industry as the result of use of imitation products.

South Dakota

Incidence of Rabies.—South Dakota was free of rabies until 1949. Since Jan. 1, 1951, there have been 27 cases of rabies, all in the eastern part of the state, including 10 cases in skunks, 9 in cattle, 3 in civet cats, 1 in a domestic cat, and 4 in dogs.

s/GILBERT S. WEAVER, Extension Veterinarian.

Texas

Annual Conference.—The fourth annual Texas Conference for Veterinarians was held June 7-8, 1951, at the School of Veterinary Medicine, A. & M. College of Texas, College Station. The following guest speakers participated in the program: Drs. C. L. Blakely, Angell Memorial Hospital, Boston; W. M. Coffee, La. Center, Ky., president of the AVMA; G. K. Davis, University of Florida, Gainesville; G. T. Easley, Sulphur, Okla.; W. O. Kester (col., V.C., U.S.A.F.); G. R. Moore, Michigan State College, East Lansing; L. J. Murphy (major, V.C.); D. A. Price, Ranch Experiment Station, Sonora; and P. H. Vardiman, Texas Agricultural Experiment Station, Marfa.

Faculty members of the School of Veterinary Medicine, A. & M. College of Texas, who appeared on the program were Drs. W. A. Boney, Jr., I. B. Boughton, J. P. Delaplane, W. S. Monlux, A. A. Price, and H. E. Redmond.

s/R. D. TURK, Chairman, Conference Committee.

Virginia

Rabies Outbreak.—Because of a rabies outbreak which started in March in the Warrenton area, an ordinance has been adopted to permit killing of foxes on sight; all dogs and cats were quarantined indefinitely; and police were authorized to shoot dogs and cats running at large. Farmers in the area have lost 11 head

of cattle due to rabies and several persons have been attacked by rabid foxes since the beginning of the outbreak.

Washington

Veterinary Conference.—The College of Veterinary Medicine at the State College of Washington provided a spring veterinary conference for veterinarians of the northwestern states and British Columbia on April 6-7, 1951. Demonstrations in the laboratories and clinic supplemented the lectures. The following guest speakers appeared on the program: Drs. D. E. Jasper, School of Veterinary Medicine, Davis, Calif.; D. T. Berman, Department of Veterinary Science, University of Wisconsin, Madison; and Mr. Gordon E. Tatum, Tacoma.

Faculty members at Washington State College who participated in the program were Drs. L. W. Groves, Fred Williams, R. L. Ott, H. E. Adler, G. R. Spencer, J. S. Dunlap, G. H. Keown, P. A. Klavano, G. H. Conner, and C. H. Bernis.

S/R. A. KAINER.

Wisconsin

Northeastern Association.—Approximately 40 veterinarians attended the spring meeting, April 19, 1951, of the Northeastern Wisconsin Veterinary Medical Association, held in the Athearn Hotel, Oshkosh. Speakers were Drs. Sam Elmer, Richland Center: "Bovine Surgery with Special Reference to Cesarean Section"; B. A. Beach, Madison: "Association Affairs"; and J. O. McCoy, Manitowoc, "Meat Inspection." S/WILLIAM MADSON, Secretary.

FOREIGN NEWS

Italy

Lombardy.—A reprint entitled "La 'Bergamine' de Lombardie et la 'Prairie Artificielle,'" by Prof. T. Bonadonna of the Istituto Sperimentale Lazzaro Spallanzani arrived with the request that it be reviewed in the JOURNAL. The article was published in the May-June (1950) issue of *Le Lait*, authoritative French periodical devoted to the study of all phases of milk.

The territorial division known as Lombardy is to Italy what famous nonpolitical regions are to other countries, viz.: Middlewest, Cornbelt, Southwest, *et al.* of the United States and so on for many importantly developed areas of the world. The author points out that in Lombardy are the world's foremost mixed farming centers, ranking

*"Bergamine" is the provincial name for stabled, adult cows and bulls as distinguished from herds also containing calves, heifers, and young stock, that is, the milking herd. The objective of bergamine discipline is maximum milk yield per head. Brown Swiss and Holstein-Friesian breeds predominate in Lombardy.

high in rice growing, and tops in fine dairy cattle and milk production.

Skirting the famous industrial cities of Milan and Turin, the area contains 2,374,000 hectares (1 hectare = 2.471 acres) of which 1,046,000 have been under intense cultivation since ancient times. [Encyclopaedia Britannica gives its density of population as 635.5 persons per square mile.]

Though the farms rarely exceed 100 to 150 hectares, a few estates range up to 300 hectares. Permanent artificial irrigation is a dominant factor. Lombardy's water flows from the Alps laden with nitrogen and therefore has high fertilizing properties. This water finds its way to the cultivated soil via subterranean passages entrapped beneath a more or less impervious covering of clay and, therefore (quoting), "The agricultural and zoötechnic aspect [of Lombardy] has no equal in Italy or in any other country."

Denmark

Dr. Riemann Studying in the United States.—Dr. Hans P. Riemann, staff member of the Research Laboratory of the Danish Ministry of Fisheries, spent three months in this country studying bacteriological methods of processing, canning, and shipping fishery products under the technical assistance program of the Economic Cooperation Administration.

Sanitary and hygienic measures to raise the quality of fish and shellfish and methods of preventing spoilage were the particular interests of Dr. Riemann who visited several research institutions and canneries while in this country.

The Danish fishing industry in 1949 exported fish valued at 192 million kroner (\$27,840,000) and expects to increase its volume.

VETERINARY MILITARY SERVICE

Conference of Air Force Command Veterinarians.—At a conference of all major Air Force command veterinarians in the United States, held in the office of the Surgeon General, Washington, D. C., on April 13-14, 1951, means of keeping the requirement for veterinary officers in the Air Force at the lowest possible number were discussed. Air Force policy has always been to utilize attending veterinarians and technically trained veterinary airmen in lieu of regularly assigned veterinary officers wherever possible. (Attending veterinarians are officers who are regularly assigned to one base and serve as an attending veterinarian at nearby bases as an additional duty.) The use of attending veterinarians makes it possible to provide service on an area basis rather than on a unit basis, thereby avoiding an unnecessary concentration of officers in an area.

Provisions to implement the policy of sending all veterinary officers and airmen to techni-

cal schools at the earliest possible date in their military service were also outlined.

Attending the two-day conference were Col. James R. Karr, Mitchel Air Force Base, N.Y.; Col. Benjamin F. Leach, Scott Air Force Base, Ill.; Lt. Col. Rowland W. Rushmore, Omaha, Neb.; Lt. Col. Harry A. Gorman, Colorado Springs, Colo.; Lt. Col. John R. Nettles, Jr., Langley Air Force Base, Va.; Major Robert W. Day, Washington, D.C.; Major Neil G. MacEachern, Dayton, Ohio. Others in attendance were Col. Wayne O. Kester, Lt. Col. Robert R. Miller, and Major Roy E. Kyner, Jr., all of the Veterinary Division, office of the Surgeon General, and Lt. Col. William B. Snodgrass, now attending the School of Public Health at the University of Michigan.

Personals.—Major Charles H. Snider, now attending the School of Public Health at the University of Michigan, was recently elected to membership in Delta Omega, the honorary health organization of the Public Health Association with membership based on scholastic attainment and contribution to the health of the nation.

Lieutenant Colonel William B. Snodgrass, also at the University of Michigan School of Public Health, attained the distinction of being elected president of the student body Public Health Club at the University.

EMERGENCY PLANNING

PERSONNEL

Dr. Hardenbergh and Dr. Winter Confer with National Committee

Dr. J. G. Hardenbergh, AVMA executive secretary, who has recently accepted an appointment as a consultant to the National Advisory Committee to Selective Service and the National Security Resources Board, and Dr. Asa Winter, veterinary medical consultant to the Health Resources Office of NSRB, met with the National Committee on May 17, 1951. Practically all phases of veterinary medical personnel problems aggravated by the present emergency were discussed with Dr. Howard Rusk and his committee. The statistical data accumulated by the AVMA Emergency Advisory Committee was studied and analyzed. As a result of this meeting, it is anticipated that the National Committee and the Health Resources Office will make a statement relative to the personnel problems confronted by veterinary medicine.

Veterinarians May Be Included in the National Scientific Register

While Dr. Hardenbergh was in Washington, D.C., attending the above meeting, he and Dr. Winter discussed with the officials of the National Scientific Register the possible inclusion of veterinarians in the Register. If veterinarians are included, it will place on machine records a great amount of information relative to the special training and qualifications of all veterinarians. Dr. Winter is continuing to explore the matter and a definite decision will probably be reached in the near future.

Deferment of Pre-Veterinary Students

Dr. W. R. Krill, member of the Healing Arts Educa-

tional Advisory Committee to Selective Service, reports that pre-veterinary medical students will be eligible for deferment on the same basis as other college students. Selective Service announced recently that the aptitude testing of students will proceed and that future deferment of college students will be based on aptitude and performance. Pre-medical, pre-dental and pre-veterinary medical students will come under these regulations and will no longer be deferred on the basis of their pre-professional training.

Once admitted to schools of veterinary medicine, they will be deferred as long as their progress and performance is satisfactory.

BIRTHS

Dr. (KSC '38) and Mrs. M. L. Farris, Morristown, Tenn., announce the birth of a daughter, Sharon Mac.

Dr. (API '42) and Mrs. Q. R. Jerome, West Memphis, Ark., announce the birth of a daughter, Jere Duane.

Dr. (OSU '49) and Mrs. Deane Marsh Chamberlain, Columbus, Ohio, announce the birth of a son, Deane Mark, on April 18, 1951.

Dr. (UP '42) and Mrs. David K. Detweiler, Broomall, Pa., announce the birth of a daughter, Judith Karen, on May 2, 1951.

DEATHS

John H. Bakelaar (CVC '07), 66, Passaic, N.J., died of a heart attack on Jan. 31, 1951.

*Emmett P. Barnhart (OSU '07), 68, Providence, R.I., died May 8, 1951. Dr. Barnhart served in the meat inspection service of several cities before coming to Providence in 1935. He is survived by his widow, two sons, and two daughters. Dr. Barnhart was a member of the AVMA.

John A. Berg (CVC '05), 86, Pender, Neb., died Jan. 14, 1951. Dr. Berg was a member of the Nebraska State Board of Examiners from 1913 to 1917. He had retired several years ago because of failing health.

David K. Buzzard (DET '94), Goshen, Ind., died in 1950. Dr. Buzzard had been a member of the AVMA.

*Capt. Max H. Carlin (OSU '35), 42, Inglewood, Calif., died March 30, 1951. Captain Carlin served in the Veterinary Corps during World War II. He was a member of the AVMA.

Winfield Clark (COL '21), 53, Canistota, S.Dak., died March 8, 1951, of a heart attack. Dr. Clark had served the Canistota area for thirty years. He is survived by his widow and two daughters.

L. S. Doyle (ONT '02), Moncton, New Brunswick, died March 3, 1951. Dr. Doyle was a food inspector for the Moncton Depart-

*Indicates members of the AVMA.

ment of Health and a former secretary of the New Brunswick Veterinary Association.

★Alexander Findlay (ONT '91), Mission City, British Columbia, died early in 1951. Dr. Findlay, an honorary member of the British Columbia Veterinary Association, was admitted to the AVMA in 1908.

William S. Ford (TH '15), 58, Oaktown, Ind., died at the veterans' hospital in Indianapolis, April 17, 1951. Dr. Ford served in World War I as a captain in the Veterinary Corps, and was with the U. S. BAI ten years, at which time he started his practice in Oaktown.

J. E. Frank (CVC '02), Indianola, Iowa, died Feb. 28, 1951. Dr. Frank had been a member of the AVMA.

C. M. Higginson (MCG '91), 81, Hawkesbury, Ont., died July 28, 1950. Dr. Higginson was president of the Central Canada Veterinary Association and of the Ottawa Society of Comparative Medicine.

★Albert N. Hughes (MCK '05), 81, Peoria, Ill., died in 1949. Dr. Hughes was admitted to the AVMA in 1917.

John D. LeDune (IND '09), Carlisle, Ind., died recently. Dr. LeDune was a general practitioner.

Richard P. Lyman (HAR '94), East Lansing, Mich., died Aug. 25, 1950. Dr. Lyman had been a member of the AVMA and had served the Association as vice-president and on several committees.

George N. MacLeod (ONT '42), 39, New Glasgow, Nova Scotia, died Nov. 28, 1950. Dr. MacLeod had been a member of the AVMA.

William B. McGuire (STJ '17), Boulder, Colo., died Dec. 3, 1950. Dr. McGuire had retired some time ago.

William C. McGuire (MCG '93), 79, Cornwall, Ont., died July 26, 1950. Dr. McGuire was a charter member of the Central Canada Veterinary Association and served on its executive council for ten years and as president for two years. Through his efforts, Cornwall was the first Canadian city to require that all milk be pasteurized.

Michael P. Maloney (CVC '10), Joliet, Ill., died Dec. 25, 1950. Dr. Maloney had retired from active practice.

J. C. Myers (CVC '01), Butte, Neb., died in 1950.

★William L. Peterson (SF '17), 60, Stockton, Calif., died early in 1951. Dr. Peterson had served as second lieutenant during World War I. He had practiced in Stockton since 1928. Dr. Peterson was a member of the California

State and North San Joaquin Valley Veterinary Medical Associations and of the AVMA.

William H. Phalen (CVC '15), San Jose, Ill., died some time ago. Dr. Phalen was a general practitioner.

Robert A. Phillips (KCV '02), 72, Portland, Ore., died Aug. 13, 1950. Since 1913, he had practiced as a chiropractor.

George R. Powell (OSU '11), Avon Lake, Ohio, died Oct. 2, 1950. Dr. Powell was a small animal practitioner.

Ray W. Richmond (GR '10), Fowlerville, Mich., died Feb. 28, 1951. Dr. Richmond had specialized in equine practice.

Charles W. Secoy (IND '04), West Milton, Ohio, died Nov. 13, 1950. Dr. Secoy had retired from active practice some time ago.

Carl Taylor (GR '18), Pittsburgh, Pa., died April 23, 1951. Dr. Taylor was employed by the U. S. Bureau of Animal Industry.

Raymond C. A. Taylor (UP '14), 61, Huntington Park, Calif., died Feb. 27, 1951, of coronary occlusion. Dr. Taylor was a veterinary meat inspector at the Los Angeles station of the U. S. BAI. He had been a member of the National Association of Federal Veterinarians and of the AVMA. He raised orchids as a hobby and had hoped to devote more time to them when he retired. He is survived by his widow.

H. E. Trawyer (KCVC '09), Omaha, Neb., died Oct. 16, 1950. Dr. Trawyer had been a member of the AVMA.

★Donald R. Welsh (IND '15), 59, Greenfield, Ind., died April 15, 1951. Dr. Welsh was a member of the Indiana State Veterinary Medical Association and of the AVMA.

* * *

Deaths Not Previously Reported

The following is a list of veterinarians reported to the AVMA central office as deceased, by federal veterinarians in charge in the respective states, in the process of checking listings for the directory department. These deaths have not been reported previously in the JOURNAL.

Eckford S. C. Littlefield, Brooklyn, N.Y.
 John A. Jones, Angelica, N.Y.
 William F. Jones, Glens Falls, N.Y.
 James G. Jolly, Franklinville, N.Y.
 Charles O. Joyce, Acton, Ind.
 Elmer H. Judkins, Poughkeepsie, N.Y.
 John Kent, New City, N.Y.
 George C. Kesler, Holley, N.Y.
 Nelson Moffatt, Pine Bush, N.Y.

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COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

Wyoming Veterinary Medical Association. Annual meeting. Worland, Wyo., June 24-25, 1951. O. E. Bunnell, Box 132, Worland, Wyo., secretary.

Missouri Veterinary Medical Association. Annual summer meeting. Robidoux Hotel, St. Joseph, Mo., June 25-26, 1951. J. L. Wells, Box 676, Kansas City, Mo., secretary.

California State Veterinary Medical Association. Annual meeting. Mar Monte Hotel, Santa Barbara, Calif., June 25-27, 1951. Charles S. Travers, 3004 16th St., Rm. 208, San Francisco, Calif., executive secretary.

Massachusetts Institute of Technology. Special course in food technology. Massachusetts Institute of Technology, Cambridge 35, Mass., June 25 to July 13, 1951. Professor Walter H. Gale, director of the summer session.

Maritime Veterinary Associations (New Brunswick, Nova Scotia, and Prince Edward Island). Annual joint conference. Mount Allison University, Sackville, New Brunswick, June 26-28, 1951. J. F. Frank, P.O. Box 310, Sackville, New Brunswick, secretary.

Maryland State Veterinary Medical Association. Annual summer meeting. George Washington Hotel, Ocean City, Md., June 28-29, 1951. John D. Gadd, Towson 4, Md., secretary.

New York State Veterinary Medical Society. Annual meeting. Mark Twain Hotel, Elmira, N.Y., July 10-13, 1951. J. S. Halat, 1231 Gray Ave., Utica, N.Y., executive secretary.

Kentucky Veterinary Medical Association. Annual summer convention. Seelbach Hotel, Louisville, Ky., July 11-12, 1951. T. J. Stearns, Livestock Exchange Building, Room 114, Bourbon Stockyards, Louisville, Ky.

American Veterinary Medical Association. Annual meeting. Milwaukee Auditorium, Milwaukee, Wis., Aug. 20-23, 1951. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Tennessee, University of. Annual short course for veterinarians. University of Tennessee, Knoxville, Tenn., Sept. 6-7, 1951. Dennis Sikes, professor of veterinary science.

The "Watch Your English" column has been temporarily discontinued.

Canadian Veterinary Medical Association. Third annual meeting. Banff Springs Hotel, Banff, Alta., Sept. 8-11, 1951. J. G. Anderson, 1016 9th Ave. W., Calgary, Alta., chairman, local committee.

Second International Gerontological Congress. Hotel Jefferson, St. Louis, Mo., Sept. 9-14, 1951. E. V. Cowdry, 660 South Kingshighway, St. Louis 10, Mo., president.

Nutritional Conference for Veterinarians. Annual conference, Iowa State College, Ames, Iowa, Sept. 13, 1951. C. D. Lee, Iowa State College of Agriculture, Ames, Iowa, extension veterinarian.

Southeast Missouri Veterinary Medical Association. Fall meeting. W. R. Sheets' Animal Hospital, Farmington, Mo., Sept. 19, 1951. F. A. Stepp, 405 West North St., Sikeston, Mo., secretary.

Southwestern Iowa Veterinary Medical Association. Fall meeting. Council Bluffs, Iowa, Oct. 2, 1951. F. B. Young, Box 6, Waukeee, Iowa.

Purdue University. Annual short course for veterinarians. Purdue University, La Fayette, Ind., Oct. 3-5, 1951. L. M. Hutchings, Department of Veterinary Science, Purdue University, La Fayette, Ind., chairman.

Illinois, University of. Annual veterinary conference. University of Illinois College of Veterinary Medicine, Urbana, Ill., Oct. 11-12, 1951. Robert Graham, dean.

American Public Health Association. Annual meeting. Civic Auditorium, San Francisco, Calif., Oct. 29-Nov. 2, 1951. J. C. Geiger, director of public health of the city and county of San Francisco, in charge of local arrangements.

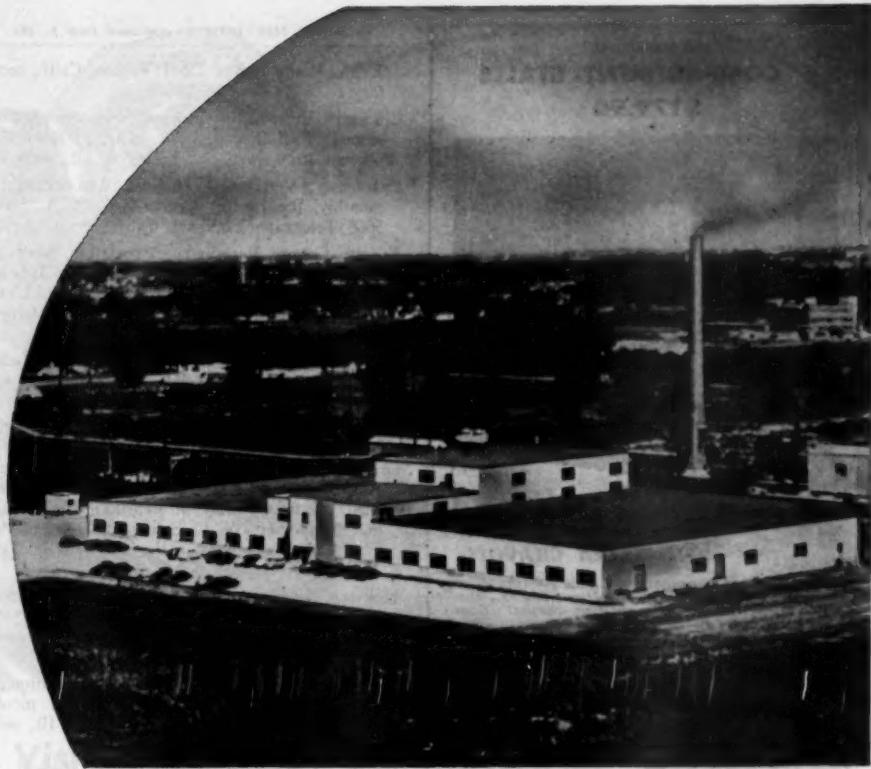
Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. Howard F. Carroll, 2024 Lombard St., San Francisco 23, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month (except July and August) at Black's Tea Room, Waterloo. F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas

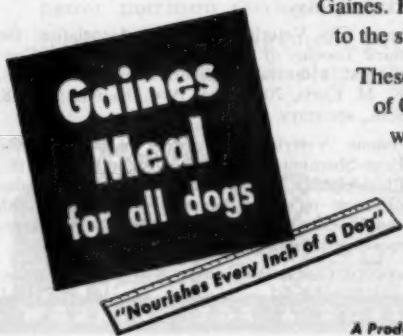
(Continued on p. 30)



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(COMING MEETINGS — continued from p. 28)

Eville, Route 1, Box 136H, Fresno, Calif., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bi-monthly, the fourth Wednesday. O. A. Soave, 5666 Telegraph, Oakland, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

Greater St. Louis Veterinary Medical Association, Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. T. M. Eagle, Parkville, Route 2, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. K. M. Curts, 70 Central Ave., Kansas City 18, Kan., secretary.

Keystone Veterinary Medical Association, the Penn-Sheraton Hotel, 39th and Chestnut St., Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., corresponding secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Trchal,

(Continued on p. 32)



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(COMING MEETINGS — *continued from p. 30*)

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1722 East Almeria Road, Phoenix, Ariz., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month. Write R. W. Worley, secretary, 3224 L.W.W., South Bend, Ind., for location.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humboldt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New Castle County Veterinary Society, the second Wednesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Harold Roberts, Paper Mill Road, Newark R3, Del., secretary.

New York City Veterinary Medical Association. Hotel Statler, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. V. E. Graff, Oakdale, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 665 East Highland Avenue, San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, bimonthly, the second Tuesday of each month. J. H. Bower, P. O. Box 355, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. E. W. Paul, Box 866, Redwood City, Calif., secretary.

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month, in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

(Continued on p. 34)

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VpC Dog Food Supplement



RU-ZYME *the Original*

→ NATURAL RUMEN STIMULANT

AIDS RUMEN FUNCTION IN COWS, CALVES AND ALL OTHER RUMINANTS

RU-ZYME is the original scientifically-blended concentration of *Preserved Rumen Bacteria*, *Enzyme Cultures*, *Vitamins* and *Trace Minerals*. The enzymes include digestive and stimulating enzymes from selected mold and bacterial cultures. Among the specific enzyme groups are diastatic, proteolytic and certain fermentation-stimulating enzymes.

RU-ZYME (Cow) is especially formulated and designed for the mature ruminant. The cow, sheep, goat, being typical ruminants, depend on the rumen and its microorganisms and attending enzymes for digesting the bulk of roughage. When rumen activity has been reduced or has ceased altogether, RU-ZYME (Cow), through high enzyme activity, helps to establish the correct environment of the rumen so that the preserved rumen bacteria may become implanted, develop, and induce proper rumen function.

RU-ZYME (Calf) "for the young ruminant." This highly-concentrated preparation supplies the young ruminant with the necessary rumen bacteria in viable form — essential vitamins and required enzymes for digestion and assimilation of milk and feedstuffs. RU-ZYME (Calf) induces correct rumen function at an earlier age and helps to retard scours due to digestive disorders.



*U. S. Patents Pending

Ask your Veterinary Supply Dealer or Write for Complete Details to

RUMELK COMPANY
SALEM, VIRGINIA

(COMING MEETINGS — *continued from p. 32*)

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company, L. G. Nicholson, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. John E. Wion, 3614 Redwood Highway South, Santa Rosa, Calif.

Roanoke-Tar (N. Car.) Veterinary Medical Association, the first Friday of each month, 7:00 p.m., in Rocky Mount. G. L. Gilchrist, Edenton, N. Car., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. R. J. McFarland, 3621 Jewell St., San Diego 9, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. R. W. Sprowl, 11756 San Vicente Blvd., Los Angeles 49, Calif., secretary.

South Florida Veterinary Society, the third Tues-

day of each month, 8:00 p.m., at the Peckway Skeet Club, Robert P. Knowles, 2936 N.W. 17th Ave., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

Foreign Meetings

First Pan American Veterinary Conference. Lima, Peru, Oct. 20-26, 1951. José Santivañez, dean, Veterinary College, San Marcos University, Lima, Peru.

Cortisone appears to play a fundamental role in the enzymatic processes of all cells.
—South. M. J., Oct., 1950.

Manufacture of cortisone is probably the most intricate and time-consuming chemical process ever undertaken on a commercial scale, according to Merck & Co. Demand exceeds supply so much that black marketing and price kiting are feared. Expanded production promises to triple the supply by the middle of next year.



ANTI-CANINE DISTEMPER SERUM

*produced from dogs that have also received
repeated injections of
infectious canine hepatitis virus*



**Anti-Canine
Distemper Serum
thus FORTIFIED is your
double-edged sword against
two diseases of high
fatality having almost identical
early symptoms. It is your
extra precautionary measure
in a single injection.**

**FROMM
LABORATORIES,
INC.**

Grafton, Wisconsin, U.S.A.

**Sold only to qualified
Graduate Veterinarians**

Supplied in 50 CC. and 100 CC. vials

distributed by:
WINTHROP-STEARNS, INC.

1450 Broadway, New York 18, New York

Still no better



**Oral
Iodine**

for

**Actinomycosis and Actinobacillosis
of soft tissue
Iodine deficiencies
Asthmatic coughing in old dogs**

SOLIDOL

**1% available Iodine in palatable liquid form
They eat it on the feed
Or give in capsule or with dose syringe**

**Pint \$.75 6 pints \$ 4.25
Gallon 4.50 4 gallons 17.10**

CURTS-FOLSE LABORATORIES

*Select Pharmaceuticals for the
Veterinary Profession since 1918*

73 Central Avenue Kansas City, Kansas

When driving, watch out for our four-footed friends on the road. Stop when you see them. Help them cross in safety. It will, at the most, mean only a few seconds hold-up.

Remember there's a long list of dog heroes—courageous dogs that have risked their own lives to pull children off the road at the sight of an oncoming truck, car, or train. Remember, too, how they lead the blind—how they are "At Your Service...All-Ways." —*National Dog Welfare Guild, New York, N.Y.*

Prescription Diets

Prescription diets developed by Dr. Mark L. Morris, Raritan, N.J., which are manufactured by the Hill Packing Co., Topeka, Kan., play an important part in the therapeutic feeding of small animals in the United States, Hawaii, Puerto Rico, and Cuba, according to the Hill Packing Co. Four different diets have been formulated, each serving a specific purpose: K/D for nephritic conditions; P/D for reproduction and lactation; B/C for obesity correction; and I/D for intestinal disorders.

Dr. George L. Mueller, Jr. (TEX '42), special representative for the Hill Packing Company, will call on veterinary practitioners in the United States in connection with the distribution and clinical application of the prescription diets, which are dispensed only by licensed veterinarians.

The maternal death rate of American women has been reduced to 1 per 1,000 childbirths, "an irreducible minimum," says the *Journal of the American Medical Association* in an editorial comment on this remarkable achievement of American medicine.

Sharp and Dohme, Philadelphia, are constructing a new modern warehouse in Kansas City, Kan., which will provide almost twice the floor space of present quarters. The branch serves veterinarians as well as physicians and dentists. A new synthetic chemical plant, being constructed at West Point, Pa., will provide basic ingredients for many of the pharmaceutical products manufactured by Sharp and Dohme for the veterinary medical profession.

CALE PULLER

The most practical instrument produced for the cattle industry in years, and the only one of its kind in the World. We will be glad to mail you a circular. Write for it today.

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516 Acoma St., Room 20

Denver 4, Colorado



broad
therapeutic
use



for
small
animals

sulfa- sugracillin

penicillin + sulfas in teaspoonful dosage

This palatable new Upjohn preparation combines *penicillin* with *triple sulfonamides* for enhanced antibacterial activity in the treatment of a wide range of bacterial infections in dog and cat practice.

Dosage: For the average size dog (20 to 60 pounds) give 2 teaspoonfuls three to four times a day. (If a fulminating infection, the initial dose may be doubled or an intramuscular injection of Depo*-Penicillin administered.) Small dogs, puppies and cats—one teaspoonful, three to four times a day.

Sulfa-Sugracillin* flavored granules are supplied in 60 cc. bottles, containing 1,200,000 units Buffered Penicillin Powder with 3 Gm. sulfonamides, for the preparation of a pleasantly flavored suspension, providing in each 5 cc. (one teaspoonful) 100,000 units penicillin G potassium and 0.25 Gm. total sulfonamides, comprising equal amounts of sulfadiazine, sulfamerazine and sulfamethazine.

*Trademark

Upjohn

Department of Veterinary Medicine

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MEMPHIS • MINNEAPOLIS • NEW YORK • PHILADELPHIA • PORTLAND • SAN FRANCISCO • TORONTO, CANADA



PHENOTHIAZINE
REGULAR N. F. or DRENCH TYPE

1 lb. can (12 to case)	80c per lb.
5 lb. can (5 to case)	77c per lb.
10 lb. drum	76c per lb.
25 lb. drum	74c per lb.
150 lb. drum	68c per lb.

PEST CONTROL

BENZENE HEXACHLORIDE	
10% gamma isomer wettable	
1 lb. canister	78c per lb.
12-1 lb. canisters	74c per lb.
24-1 lb. canisters	70c per lb.
6 lb. bag	53c per lb.
4-6 lb. bags	48c per lb.
8-6 lb. bags	45c per lb.

CHLORDANE 40% WETTABLE	
6 lb. bag	70c per lb.
4-6 lb. bags	66c per lb.
8-6 lb. bags	62c per lb.

LINDANE 25% WETTABLE

99% gamma isomer BHC	
1 lb. can (12 per case)	33.60 per lb.
4 lb. can (4 per case)	3.55 per lb.

METHOXYCHLOR 50% WETTABLE
"MARLATE" 50 (DuPont)

4 lb. bag	78c per lb.
12-4 lb. bags	70c per lb.
24-4 lb. bags	68c per lb.

DDT TECHNICAL POWDER

for preparing oil spray solutions	
1 lb. can (12 per case)	90c per lb.
10 lb. drum	82c per lb.

SULFONAMIDES

SULFANILAMIDE POWDER U.S.P.

1 lb. bottle	\$1.80 per lb.
10 lb. drum	1.70 per lb.
25 lb. drum	1.65 per lb.
100 lb. drum	1.55 per lb.

SULFATHIAZOLE SODIUM POWDER U.S.P.

1 lb. bottle	\$4.95 per lb.
5 lb. bottle	4.90 per lb.

SULFAPYRIDINE SODIUM POWDER

1 lb. bottle	\$10.00 per lb.
5 lb. bottle	9.75 per lb.

Write for Complete Price List
 Terms 1% 10 days, net 30 days, F.O.B. Chicago
 Freight Allowed on Shipments of 100 Lbs. or More
 Prices Subject to Change Without Notice

AMERICAN CHEMICAL CO.

Fine Chemicals for the Veterinary Profession
 1116 West 37th Street, Chicago 9, Illinois

CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, \$2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

Remittance must accompany order.

Deadline for want ads 8th of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

WANTED—assistant for small animal hospital. Modern apartment and \$75.00 per week. Address Dr. James W. Boynton, 299 Central Ave., Yonkers, N.Y.

WANTED—veterinarian with some meat inspection experience for five-sixths time position with Hawaii Health Department. Monthly salary \$283.68-\$339.23 plus \$20.83 bonus. Address (airmail) T.H. Civil Service Commission, Keelikolani Building, Honolulu, Hawaii.

WANTED—veterinarian, married, principally interested in large animal work, to assist in constantly expanding practice. Two veterinarians working full time now, but need third. Own house provided. Address Lawrence Hospital for Animals, R.F.D. #3, Princeton, N. J. Telephone 2293.

WANTED—graduate veterinarian of AVMA-approved school as assistant in 90 per cent large animal practice. This position offers advancement and can lead to a full partnership of a \$100,000 yearly gross. Work is hard and long hours every day of the week. This is an opportunity for an industrious, energetic young veterinarian. Experience is not necessary, just ambition. Modern home furnished close to hospital. Address "Box J 13," c/o JOURNAL of the AVMA.

WANTED—graduate veterinarian for public health meat control. Experience in meat inspection preferred, but not essential. Starting salary \$298.50 per month with yearly increments. Two weeks' vacation, sick leave, and liberal disability and retirement benefits. Give age, experience, references, and other particulars when answering. Permanent position. Address Jefferson County Board of Health, Birmingham, Ala.

WANTED—veterinarian, New York license, to assist in modern small animal hospital in New York City. Good future, full partnership in short time for right party. Address "Box J 6," c/o JOURNAL of the AVMA.

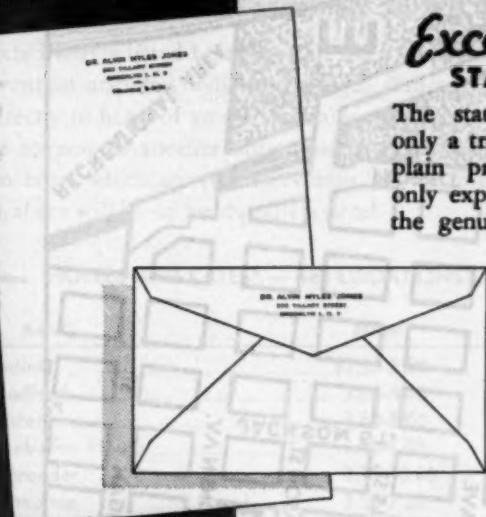
Assistant wanted for small animal practice in Connecticut. Opportunity to learn x-ray surgery. Three-room apartment available. State qualifications and salary wanted in first letter. Address "Box J 4," c/o JOURNAL of the AVMA.

WANTED—male graduate veterinarian to do state regulatory work on animal disease control and meat inspection. Permanent position. Contact R. E. Libby, State Veterinarian, Division of Animal Industry, State House, Augusta, Maine.

(Continued on p. 42)

Excel-Print® STATIONERY

The stationery that costs only a trifle more than the plain printed but which only experts can tell from the genuine engraved.



ILLUSTRATED: Letterheads, 5" x 8½", and envelopes 3½" x 6", to match. Both are "Excel-Printed" on Professional Bond paper. Our price: \$11.75 for 1000 of both, delivered FREE anywhere in the U.S.A.

*T.M. Reg. U.S. Pat. Off.

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"Excel-Print" stationery is made only by us. It is a superlative product that combines an exclusive process with fine papers to create stationery that is in keeping with the dignity of your profession. You must see and inspect it to appreciate its true quality and consequent popularity. Twenty-four years of organizational know-how, the finest of modern equipment and a volume that services more than 80,000 doctors, insures these statements. Let us give you all the facts.

FREE SAMPLES AND CATALOGUE

Samples of "Excel-Print" and plain print stationery and copy of BIG catalogue illustrating, describing, and pricing ALL items used in doctors offices are yours on request. No obligation.

A black and white advertisement for Professional Printing Company, Inc. It features a stylized drawing of a typewriter on the left. To the right of the typewriter, the company name is written in a bold, serif font. Below the name, the slogan "America's Largest Printer to the Professions" is written in a smaller, italicized font. At the bottom, there is additional text: "202-208 Tillary St., BROOKLYN 1, N.Y.", "STATIONERY - BUSINESS RECORDS - PRINTING - RECORDS - CASES & COVERS".

**PROFESSIONAL PRINTING CO., INC.
202-208 Tillary St., Brooklyn 1, N.Y. 8-7-1**

Please send me samples of stationery and copy of your BIG General Catalogue.

Dr. _____

Street Diagram of Milwaukee, Wisconsin, Showing Hotels Selected for AVMA Meeting and Their Proximity to the Auditorium

Note: The section shown on this diagram lies in the southeastern part of Milwaukee and represents only a small portion of the city's total area.



HOTEL RESERVATIONS — MILWAUKEE CONVENTION

Eighty-Eighth Annual Meeting, AVMA, August 20-23, 1951

Selected hotels listed below are all near the Milwaukee Auditorium, where convention activities will be centered. Fill out reservation form and mail it directly to hotel of your first choice. If that hotel is filled, it will forward your request to another hotel you have named. Confirmation will come from hotel which accepts reservation. Since this is an auditorium convention, there will be no headquarters hotel.

HOTELS AND RATES* — SEE LOCATIONS ON OPPOSITE PAGE

Hotel	Single	Double (with Double Bed)	Double (with Twin Beds)
1. Antlers	\$2.25-5.00	\$3.50-6.00	\$6.00
2. Medford	3.00-4.00	4.25-5.25	6.00-7.00
3. Pfister	3.50-8.00	6.50-10.00	7.00-12.00
4. Plankinton House	3.50-6.00	6.00-8.00	6.50-9.00
5. Schroeder	3.75-10.00	6.50-10.00	8.00-12.00
6. Wisconsin	3.50-7.50	5.50-9.00	7.50-10.00

*Information about availability and rates of suites may be obtained on request to hotels of your choice. See reservation form below.

Cut Off Here

HOTEL RESERVATION FORM — AVMA CONVENTION

To: (Name of Hotel) Date

Milwaukee, Wis.

Please make reservations indicated below:

(Three choices MUST be shown.)

First choice hotel

Second choice hotel

Third choice hotel

Accommodations and Rates Desired:

- Single room at \$..... per day
 Double-bed room at \$..... per day
 Twin-bed room at \$..... per day
 Send me information about suites

Arriving on (date) at a.m. p.m.

Leaving on (date) at a.m. p.m.

Room will be occupied by:

Name City and State

Name City and State

Your Name (print or type)

Street Address

City Zone State

Correct mineral deficiencies with

Caminal

a canine mineral supplement

Caminal supplies calcium, phosphorus, iron and iodine together with vitamins A-B₁-B₂-D₂ and wheat germ oil. Use in cases of rickets or to help prevent eclampsia in bitches. The iron and B vitamins in Caminal make it an excellent aid in controlling nutritional anemias.

When puppies show poor growth, faulty tooth development, poor co-ordination, inattentiveness and deafness, particularly when on a milk diet, supplement the ration with Caminal. Caminal is a product you can recommend to your dog breeder clients.

Supplied in 1-lb.—5-lb.—25-lb. packages.

To be dispensed only by or on
the prescription of a veterinarian.

VETERINARY LABORATORIES • KAW STATION • KANSAS CITY 18, KANSAS

CLASSIFIED ADS — *continued from p. 38*

Position open for assistant veterinarian in dog hospital in New York City. Room available for single man. Minimum salary \$75.00. Give full particulars. Address "Box J 22," c/o JOURNAL of the AVMA.

WANTED—assistant veterinarian for general practice in western Oregon. Address "Box J 18," c/o JOURNAL of the AVMA.

Wanted—Positions

WANTED POSITION—Lithuanian D.P. veterinarian, graduate of Hannover in Germany, 30 years old, married, desires position as assistant in small, large, or mixed animal practice. Address "Box J 3," c/o JOURNAL of the AVMA.

Woman, age 39, would like position as veterinarian's assistant in animal hospital. Has had pre-med. (including parasitology) and first year medical school. Prefers western United States area near mountains or desert. Address "Box J 5," c/o JOURNAL of the AVMA.

WANTED POSITION—draft-exempt veterinarian, age 32, desires position with biological and pharmaceutical supply company. At present, employed as an instructor in an AVMA-approved school. Address "Box J 17," c/o JOURNAL of the AVMA.

Veterinarian with small animal experience desires position with small animal practitioner leading to partnership or sale. Licensed in Connecticut, New Jersey, and Pennsylvania. Address "Box J 16," c/o JOURNAL of the AVMA.

Pennsylvania graduate, small and large animal ex-

perience, military classification Priority Four, desires responsible position on percentage basis leading to lease, partnership, or ownership. Address "Box J 15," c/o JOURNAL of the AVMA.

Member Royal College of Veterinary Surgeons. Polish, experienced in small and large animal practice. Speaks good English, French, and German. Seeks assistantship, preferably in country practice, for about \$100 a week. Address "Box J 23," c/o JOURNAL, AVMA.

Wanted—Practices

Wanted to buy or lease going mixed or small animal practice. Give details in first letter. Service exempt. Address "Box J 9," c/o JOURNAL, AVMA.

PRACTICE WANTED—small animal or mixed practice in Alabama or Georgia; will buy outright. Have excellent mixed practice with small animal hospital and large apartment near Philadelphia to lease or sell. Address "Box J 7," c/o JOURNAL, AVMA.

WANTED PRACTICE—small animal. Will lease until able to purchase. Two veterinarians—couple, experienced, graduates of AVMA-approved schools. Address "Box J 20," c/o JOURNAL of the AVMA.

Interested in purchasing a good small animal hospital or practice located in New Jersey, Maryland, or Pennsylvania. Substantial cash available for down payment. Address "Box J 2," c/o JOURNAL, AVMA.

I will buy or lease a small animal practice and hospital in or around Philadelphia. Address "Box J 1," c/o JOURNAL of the AVMA.

(Continued on p. 44)

an improved water-in-oil
emulsion with both sodium
sulfathiazole and sodium
sulfamerazine

In the year that MERASUL has been produced it has become our most popular water-in-oil emulsion. It has proved its efficacy in the treatment of bovine mastitis, its ease of mixing with desired amounts of penicillin and streptomycin, and its marked economy. We recommend MERASUL highly to you.

12—100 cc. vials.....	\$12.75
6—250 cc. vials.....	12.75
12—250 cc. vials.....	24.75

We cordially invite you to visit our display at the AVMA Convention

BOOTH NO. C-58

Milwaukee
August 20-23



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SYRACUSE, NEW YORK

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BE SURE TO SEE

INSTRUMENTS
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for the

**LARGE ANIMAL
PRACTITIONER**

You'll be Welcome at
our Booth No. C-31
at the AVMA CONVENTION
in Milwaukee in August, 1951.

NICHOLSON MANUFACTURING, Inc.
Denver, Colorado

**RIVERSIDE ALL STEEL KENNELS—QUALITY FIRST**

Seven Compartment. Upper tier 22x20x30. Lower tier 28x28x30. Five Compartment. Upper tier 22x20x30. Lower tier 27x31x30. Sliding doors may be installed between openings for extra large cages if desired. Bottoms of cages are galvanized. **MINOR CHANGES IN DESIGN AND EQUIPPED WITH 3-inch ball bearing CASTERS AT NO EXTRA COST.** Faultproof latches and identification tags on steel barrel doors. Bottom cages have six-inch ventilating strip. Shipment FOB our plant.

5 compartment	\$195.00
7 compartment Single	\$275.00
8 compartment	\$310.00 each

TERMS MAY BE ARRANGED IF DESIRED

A lifetime of service and guaranteed by one of California's oldest iron works.

RIVERSIDE IRON WORKS
5422 Mission Blvd. Riverside, California

For Sale or Lease—Practices

FOR SALE—a real buy. Small animal hospital near Los Angeles. No real estate. Grossed \$20,000 last year. Forty animal capacity. Expecting recall to Army. \$12,000 cash or \$13,500 terms. Address "Box E 12," c/o JOURNAL of the AVMA.

FOR SALE OR LEASE—BALTIMORE, MARYLAND—Small Animal Practice—A most unusual opportunity in a city of over 1,000,000 population. A \$35,000 gross practice doing all cash business, 6-room and bath home with completely modern brick hospital and runs adjacent. On main artery emanating from city. Owner will make it possible for right person to buy. Address B. J. & G. W. Frederick, Inc., 115 W. Saratoga St., Baltimore 1, Md.

FOR SALE—mixed practice, long established, in outstanding dairy section of western Washington. Will sell equipment and drug inventory at a reasonable price. No real estate involved, with lease available for office and hospital. Address "Box J 14," c/o JOURNAL of the AVMA.

FOR SALE—well-established pet hospital, four-year-old building. Oldest practice (10 years) in thriving desert city of 35,000. Good clientele. Thirty-two steel kennels, outdoor runs. Excellent location. \$10,000 will handle. Must sell due to domestic difficulties. Address "Box J 12," c/o JOURNAL of the AVMA.

FOR SALE—new five-room hospital and general practice in prosperous Midwest community, doing a \$20,000 approximate gross, good business location, and priced at \$15,000. Liberal terms to suit right person. Price includes real estate, hospital furnishings, and some equipment and drugs. Address "Box J 11," c/o JOURNAL of the AVMA.

Hospital and apartment combination in beautiful southeastern Florida for lease, with option to buy or re-lease at end of year's lease. Florida license required. Address "Box J 8," c/o JOURNAL of the AVMA.

Well-established small animal hospital in rich rural northern California community for sale or lease. Must have at least two years' small animal experience. Address "Box J 23," c/o JOURNAL of the AVMA.

FOR SALE—due to death of prominent veterinarian, old, established mixed practice in Pennsylvania. Well-equipped small animal hospital, drugs, iron cages, fenced runways, overflow boarding kennel, large stable with stalls, large garage. Lovely home: 6 large rooms, newly decorated, center hall, bath, shower, attic. Thermostatic control hot water heater. Stoker-fired coal furnace, new roof. Address "Box J 24," c/o JOURNAL of the AVMA.

Remittance must accompany order

FOR SALE—fine, three-year-old, 67-cage hospital. Midwestern city. Nice apartment. Four veterinarians now employed. 75 per cent large animal. All facilities, two cars included. Over \$80,000 gross. \$20,000 to handle. Owner being recalled to Army. Address "Box J 21," c/o JOURNAL of the AVMA.

(Continued on p. 46)

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Your copies of the Journal of the American Veterinary Medical Association and the American Journal of Veterinary Research will be separately bound in the finest grade of washable buckram, with your name imprinted on the front cover. The color of the binding for the AVMA Journal is black, for the Research Journal, blue. Gold stamping.

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(CLASSIFIED ADS — *continued from p. 44*)

All Veterinarians

in attendance at the Milwaukee meeting are invited to visit our exhibit of the

X-Ray ANIMAGRAPH

New "51" Model

This unit is designed for the exclusive use of the veterinarian. No small animal hospital is complete without an X-Ray Animagraph.



CAMPBELL X-RAY
CORPORATION
110 Cummington St.
Boston 15, Mass.

FOR SALE—small animal hospital with home, located in mid-coast California city of 12,000. Mixed practice, good location, selling on account of health. Address "Box J 19," c/o JOURNAL of the AVMA.

FOR SALE—small animal clinic, grossing \$24,000, without hospitalization or boarding. High net. One mile from ocean. Ideal climate. Pacific Beach Veterinary Clinic, 1362 Garnet Ave., San Diego 9, Calif.

Miscellaneous

LOST AND FOUND—four keys on AVMA key ring. Returned to our office by post office. Address AVMA, 600 S. Michigan Ave., Chicago 5, Ill.

Books and Magazines

Send \$1 for June '51 Dog World issue. Separate article on "How to Groom, Condition, and Trim Each Breed for the Show Ring." Keep up on dogs with Dog World magazine, \$3 a year. Judy Publishing Company, 3323 Michigan Blvd., Chicago 16, Ill.

For Sale—Artificial Insemination Supplies

ARTIFICIAL INSEMINATION INSTRUMENTS—Essential equipment, replacement parts and materials, designed and manufactured especially for artificial insemination. Prompt delivery. New catalog. Address: Breeder's Equipment Co., Flourtown, Pa.

TAMM prophylactic
aid
to
udder
care!

Udder Supports

The TAMM Support provides three plus factors in udder care and treatment!

1. Positive protection against self-sucking, stepping on teats, cuts, and bruising from fence wire, swamp rods, stumps, etc., with the accompanying danger of infection.

2. Transfers the weight of heavy, swollen, or congested udders from strained muscles to the cow's back, preventing further breakdown.

3. Waterproof bag also serves as a container for medicinal solutions in which udder treatment can be extended at effective temperatures.

Available in four sizes — extra small (cows 900 lbs. or less), small (900 to 1100 lbs.), medium (1100 to 1600 lbs.), large (over 1600 lbs.).

ORDER today — \$15.00 retail. 30% professional discount.

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Specialty Co.
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LEAN, RED MEAT*
in KEN-L-RATION

**It Says So On The
Label**

INGREDIENTS: Water, HORSE MEAT, Ground Horse Bone, Soya Grits, Oatmeal, Wheat Products (Ground Wheat, Whole, Gray Shorts, Wheat Bran), Cracked Barley, Horse Meat, Rye 3.2%, Salt 0.5%, Primary Dried Yeast 0.18%, Irradiated 7-Dehydrocholesterol, Onion and Garlic Powder for flavoring, Sodium Nitrite 0.0045%, Carotene 0.003%.

MANUFACTURED BY The Quaker Oats Company CHICAGO, ILL., U.S.A.



**Fortified With
Vitamins and Minerals, Too!**

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The genus *Salmonella* comprises approximately 160 types, all of which are potentially pathogenic for man, domestic mammals, and birds.—*Austral. Vet. J.*, March, 1950.



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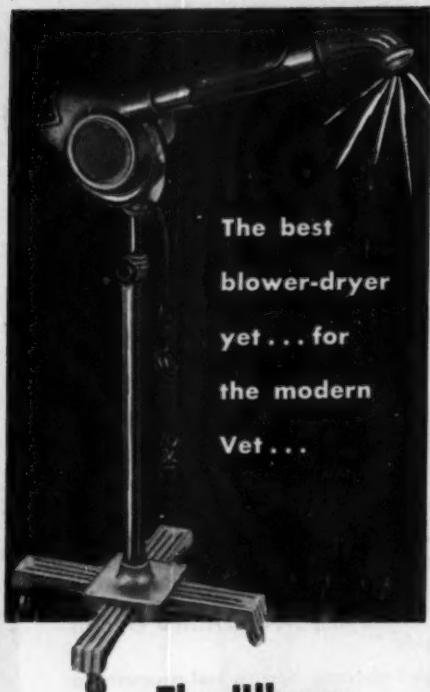
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Oliver A. Bauman, manager since 1943 of vaccine production for the Jensen-Salsbury Lab., Kansas City, Mo., left on May 1 as the United States representative to advise India's Ministry of Agriculture on the production of animal vaccines and serums. The assignment is made in connection with the Point Four program of sharing technical knowledge with other countries.

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Tables.—Tables should be simple. Complex tables are not conducive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

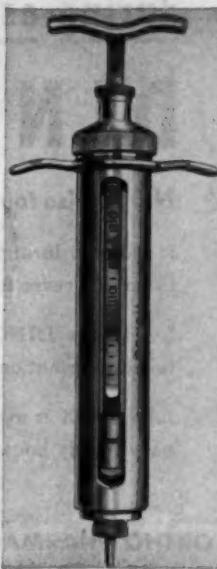
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Chemotherapy.—The recent advances in chemotherapy have nowhere been more effective and spectacular than against some types of bacterial infection—first the evolution of antiseptics, then the sulfonamide drugs, and finally penicillin and the rapidly expanding antibiotic group, says *Veterinary Review* (India), Feb., 1950.

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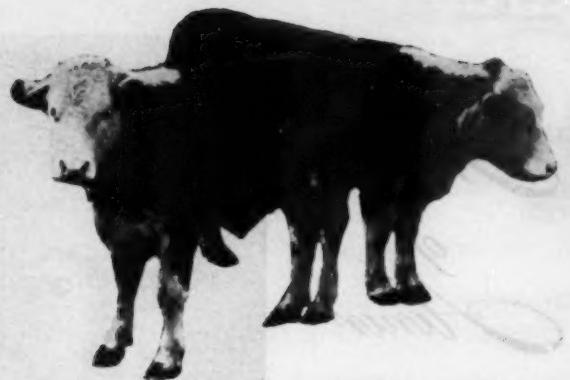
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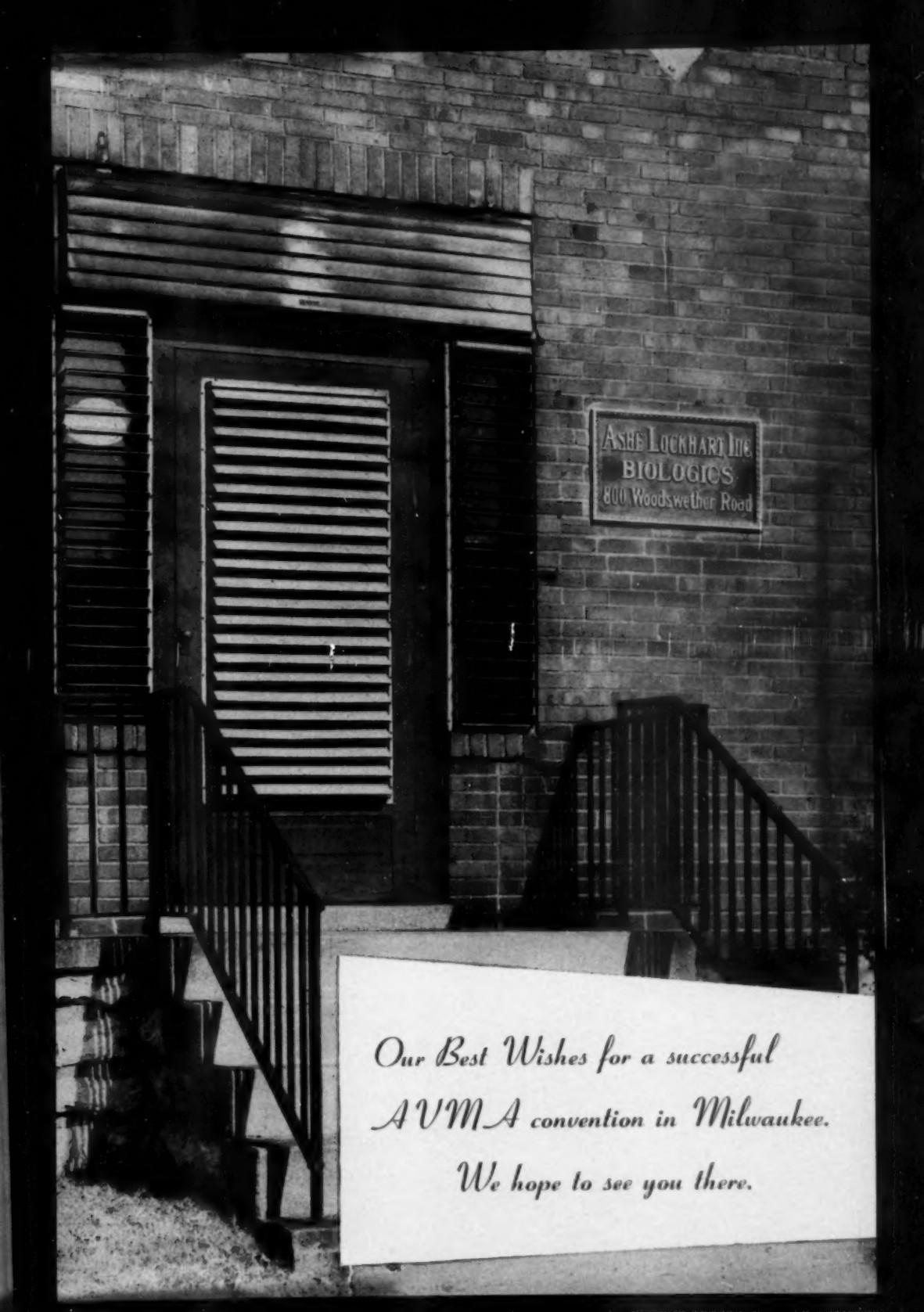
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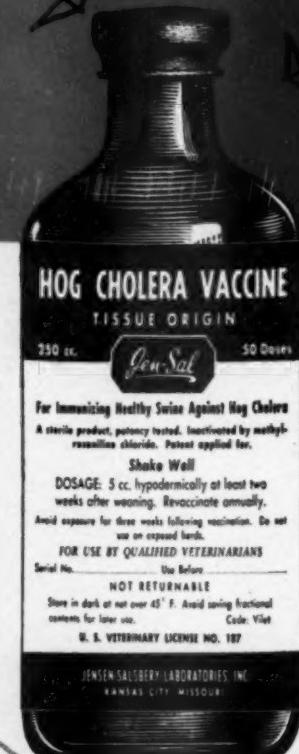
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